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PaperandPulpDivisionsFormedUnderOPM

Selection of Group Representing Publishing and Printing Completes Three Divisions of Pulp and Paper Products Advisory Committee—Primary Manufacturers and Converters Already Formed.

With the nomination of twelve members of the publishing and printing committee on July 29, at Washington, D. C., three divisional committees of the paper and pulp industry have been formed.

The meeting, attended by 139 representatives from the newspaper, magazine, book publishing and printing industry, was held at the request of the Paper and Pulp Division of the Office of Production Management. Two other committees, one representing the primary manufacturers of pulp, paper and paper board, and the other covering the converting branch or manufacturers of paper products, have been previously formed.

Government to Approve Committee Members

These three divisional committees will be appointed and announced by the Paper and Pulp Division of the OPM after the nominees have been passed upon by the government. Sub-committees are then expected to be formed to advise on specific problems. An over-all Pulp and Paper Products Defense Committee will then be formed to advise the Office of Production Management on broad policies affecting the pulp and paper industry. It is understood that in all cases the committees and sub-committees will function only in an advisory capacity, the government only having the authority to decide what action shall be taken.

Estimate of Defense Needs Large

It was estimated at Tuesday's meeting that defense requirements for paper boxes, alpha cellulose for powder-making and other products of the paper and pulp industry would increase consumption of the industry's products by 2,000,000 tons this year and as much more next year.

Production of pulpwood must be maintained at the highest possible level, it was said, the collection of waste paper and rags extended and all machinery operated on an all-out basis, officials said.

To Form Chemical Committee

A chemical sub-committee will be set up as soon as possible to advise the government regarding the best way of reducing chlorine consumption and other problems concerning the industry's supply of sulphur, casein and formaldehyde.

Pulp Shortage Foreseen

Ossian Anderson, president of the Puget Sound Pulp and Timber Company, in commenting on the pulp supply situation was reported to have said on July 29 that earlier forecasts of a pulp shortage now appeared to be approaching reality.

"Wood pulp of all grades in storage in the United States declined to 80,000 tons by June 1," Mr. Anderson commented. "In March, 1940, stocks were up to 325,000 tons. They hit a 1939 low of 215,000 tons."

In the unbleached sulphite division, he said, demand appeared likely to exceed supply by 300,000 tons on the basis of current production and consumption rates.

He quoted estimates of the Office of Production Management putting domestic demand at around 1,604,000 tons, with production and imports running at the rate of 1,300,000 tons for the year. He indicated that there might be some possibility of expanding the supply over the OPM estimate, but the top figure he could see with straining production and maximum imports was 1,465,000 tons, or 139,000 tons short of the estimated demand.

Virginia Paper Co. Pays Bonus

RICHMOND, Va., July 21, 1941—Virginia Paper Company employees recently received wage bonuses amounting to approximately 10 per cent.

Employees of the firm at its plants here, in Washington, D. C., Charlotte, N. C., and Jacksonville, Fla., participated in the payment.

D. M. Blair, president of the company, said it had been the company's policy for several years to disburse wage dividends when earnings permitted. The last previous wage dividend was distributed in December, and amounted to 6 per cent of the worker's pay.

Canadian Pulp Exports to U. S. Increasing

Shipments For May of 75,551 Tons Was 27.4 Per Cent Above Like Month Last Year—Largest Gain Reported In Unbleached Sulphite Pulp Which Increased 28,000 Tons — Other Industrial News.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., July 28, 1941—Following receipt in the United States during April of not a single ton of pulp from the Scandinavian countries, only a small shipment of 863 tons reached that country during May, while Canada's pulp exports to the United States continue to grow and, if the threatened shortage of pulp develops, should show further increases.

The small amount of Scandinavian pulp to reach the United States during May came from Finland, whose northern port of Petsamo appears to have been blockaded with the entry of Russia into the war. This will further curtail the shipments from that source, whereas before the war started these countries shipped to the United States many times the Canadian exports to that market of pulp and paper.

This situation will supplement considerably any possible falling off of newsprint exports for those producers who have pulp for sale outside their own requirements. This, indeed, is beginning to include most of the newsprint mills. Abitibi, for instance, is running well ahead of last year in exports of bleached sulphite pulp; Consolidated Paper has kraft products; Brompton also has kraft products; Donnacona unbleached sulphite; Bathurst sulphite and kraft pulp; Lake St. John and St. Lawrence surplus unbleached sulphite.

Canadian Pulp Exports Up

Exports of Canadian pulp to the U. S. market showed a slightly greater percentage gain in May than for the five months. In May, exports were 75,551 tons, an increase of 16,219 tons, or 27.4% over May, 1940. In the five months to May 31, exports increased from 259,141 last year to 326,829 tons, a gain of 67,688 tons, or 26.2%. The largest gain was in unbleached sulphite, which rose 28,000 tons, from 79,920 tons to 108,050 tons, while bleached sulphite pulp shipments were up 21,000 tons, from 126,562 to 147,673 tons.

The drop in U. S. imports from Europe was much greater than the increase in imports from Canada, as United States mills largely increased their own production with Europe cut off, a condition that could not apply to newsprint, as U. S. mills for long have been operating close to 100% capacity.

Paper Mills Cut Titanium

Fine paper makers have agreed to the request of the government to reduce their consumption of titanium dioxide. This move is coincidental with the step already taken to curtail the use of chlorine by 10%.

Canada Retains N. Z. Market

Canada will continue to supply the entire New Zealand demand for newsprint for at least another four years. A contract giving Canada the sole right to export newsprint to New Zealand, now in existence, will not expire until 1945.

Last year New Zealand imported Canadian newsprint valued at $1,452,639, according to the Department of Trade and Commerce. This compares with $1,250,298 in 1939. The advance in shipments last year was due to purchases for stock against a possible wartime shortage.

Indications are that for the current year shipments from Canada to New Zealand will be on a somewhat lower basis, as the New Zealand government has requested publishers to reduce consumption by cutting the size of their publications.

Paper Stocks Firm

Pulp and paper stocks have shown a steady comeback in market value recently. Though the gains of late have not been pronounced, many are selling near their high for 1941, while the gain from the low, on a percentage basis, has been quite marked in some cases.

Consolidated Suffers Fire Loss

Fire destroyed the sawmill and lumber yards of the Consolidated Paper Corporation at Pembroke Thursday, entailing a loss estimated at $300,000, including finished lumber and plant. The mill was one of the largest in Eastern Ontario and employed about 250 men.

Plant Modernization Brings Results

The programme of plant modernization brought to completion by the Bathurst Power and Paper Company, Ltd., in 1940, has shown substantial results in the first six months of 1941, it is reported. Production in all lines, including kraft pulp, kraft and container board, and sulphite pulp, are stated at new high levels with substantial orders on the books.

Canadian business in box board has shown substantial increases, while exports of unbleached sulphite pulp to the United States have moved up and are expected to show even further increases. Results for the six months were an appreciable gain in net profits over the comparable 1940 period, in spite of higher taxes and some increases in operating costs, it is understood.

Newsprint Aids Exchange

Newsprint, the most valuable single source of foreign exchange to Canada, continues to bring to the Dominion valuable monetary resources to assist the prosecution of the war, officials declare.

Newsprint exports, mainly to the United States, were valued at $151,000,000 in 1940, compared with $116,000,000 in 1939, and maintained their position ahead of wheat in export dollar value. In 1941, continued heavy exports are being made with consequent assistance to the financial position of the Dominion.

In spite of the large income to Canada from newsprint officials said outside customers are buying at low prices compared to those which existed during the first great war and immediately afterwards.

Information here is that peak Canadian capacity in newsprint production had yet to be reached and that further development is possible.

News of the Wisconsin Paper Industry

Consolidated Water Power & Paper Co. and Nekoosa-Edwards Paper Co. Reelect Officers At Annual Meetings—Kimberly-Clark Co. Employees Are To Wear Safety Shoes In Some Departments.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., July 28, 1941—One hundred stockholders of the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., representing three-quarters of the entire outstanding capital stock of the company, were present at the company's annual meeting Wednesday afternoon, July 23, at the company's offices.

Reports were given by Ralph Cole, comptroller, Stanton W. Mead, general production manager, and Walter L. Mead of Chicago, general sales manager. They indicated highly satisfactory profits, sixty per cent of which have been set aside for local, state and federal taxes. Employment was shown to be in excess of 2,300 persons, an all-time high for the company, according to Stanton Mead. Sales growth for the last five years was pointed out by Walter Mead, who said new records of volume are being made for both pulp and paper, and that January, March and May of this year touched new high points. The company is developing sales of its products closer to the manufacturing sources, availing itself of the favorable low freight rate factor in the middle west. No sales are being made for national defense, he declared.

All of the directors were reelected, including George W .Mead, president; Stanton W. Mead, vice-president, treasurer and director of manufacturing; Walter L. Mead, vice-president and director of sales; E. B. Redford, secretary; and T. W. Brabeau.

Color photographs of company operations were shown by Burt Williams, head of the promotion department.

Nekoosa-Edwards Reelect Officers

Officers and directors of the Nekoosa-Edwards Paper Company were reelected at the annual meeting of stockholders Wednesday, July 23, at the company's offices at Port Edwards, Wis.

The officers are: John E. Alexander, president and general manager; Guy O. Babcock, vice-president, and C. A. Jasperson, secretary-treasurer. Remaining directors are L. M. Hanks, Madison, Wis.; Judson G. Rosebush, Appleton, Wis.; A. S. Puelicher, Milwaukee, Wis.; and J. B. Nash, Wisconsin Rapids, Wis.

Sixty stockholders attended the meeting, at which reports showed a favorable business condition and outlook.

Commission Favors Power Merger

Favorable action was taken by the Wisconsin Public Service Commission on the consolidation of the Wisconsin Electric Power Company, Milwaukee, Wis., the Wisconsin Michigan Power Company, Appleton, Wis., and the Wisconsin Gas and Electric Company, Racine, Wis. The companies formerly were part of the North American system.

Authorization was given the Wisconsin Electric Power Company to issue $12,650,000 of common stock to acquire the common stock of the other two utilities.

The commission said the recent hearing gave evidence that the three companies are now operated to a large extent as a coordinated and integrated system.

Employees To Wear Safety Shoes

All employees of a number of departments at the Kimberly-Clark Corporation's mill at Kimberly, Wis., will be required to wear safety shoes after October 1 as a further means of preventing accidents. Exceptions will be made upon medical advice respecting foot deformities.

Gilbert Employees To Hold Picnic

Employees of the Gilbert Paper Company, Menasha, Wis., will hold their annual picnic Sunday, August 3, at Smith Park at Menasha. Clarence Elmgren has been appointed general chairman. One feature will be the annual amateur show, to be directed by Ben Rappert.

Golf Jamboree Well Attended

More than 145 golfers participated in the 13th annual jamboree of Kimberly-Clark Corporation at Ridgeway Golf Course, Neenah, Wis., Saturday, July 19. The attendance was the largest of any past jamboree, and was twice that of last year.

Chester Bland turned in the low net, and second low was registered by R. Stark. High net award was won by L. Butler. J. Gabbert and J. Kneice took honors for the longest drives, and Les Johnson and Jack Lemberg for being closest to the pin.

The jamboree also included a qualifying round for the annual Kimberly-Clark golf tournaments in five flights. Ninety-one will participate.

Arrangements for the jamboree were made by Dan Behnke, Charles Abel, George McElroy and Arthur Homblette.

Valley Iron Works Make Improvements

Improvements are to be made on the buildings of the Valley Iron Works Company, Appleton, Wis. A wood front on its main building will be replaced with concrete and brick. The project will cost about $8,000.

R. F. Bellack Accepts Appointment

Richard F. Bellack, executive vice-president of the Fox River Paper Corporation, Appleton, Wis., has accepted an appointment to the newly created committee on economic policy of the National Association of Manufacturers.

A. T. Gardner Resigns

A. T. Gardner has resigned as technical director of the Combined Locks Paper Company, Combined Locks, Wis., to accept a position as paper mill superintendent of the Provincial Paper Company, Port Arthur, Ontario. The Gardner family expects to move to Port Arthur in September.

Demand For Book Papers Steadily Expanding

Midwest Reports Mill Deliveries On Some Sulphite Papers Twelve Weeks Behind Orders—Demand For Paper Specialties Increasing — Better Packaging Attracting More Attention — Other News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., July 28, 1941—Growing indications that early September will see an upward surge in the general price structure are appearing on all sides at the present time. Even during the supposedly slack summer period prices in virtually all lines are pressing the top figure and the firming up process has extended to the point that any more demand and added firmness in the Fall will make an all around boost a necessity.

Mills are reported here as far back in orders with some variation depending upon the types of paper. Groundwood mills are scheduled ahead for late September and October and krafts are reported to be in a similar category. Sulphites reported eleven and twelve weeks behind orders in many instances and there were reports that the margin was spreading in the book and cover field where demand is increasing daily. Specialties were in better demand week by week while the board market was showing the results of a general marked buying upturn in the board field. Waste papers were firm to strong.

W. P. Paepcke Gets Appointment

Walter P. Paepcke, president of the Container Corporation of America, has just been appointed to the newly created committee on economic policy of the National Association of Manufacturers. Other Chicago appointments to the important committee which has a great deal to do with recommendations made by the N.A.M. with reference to the defense program are General Robert E. Wood, chairman of the board of Sears, Roebuck & Company and F. N. Bard, president of the Barco Manufacturing Company. All three are active in the work of the Illinois Manufacturers Association, the State affiliate of the national unit.

Salesmen's Golf Outing

The western division of the Salesmen's Association of the Paper Industry held its third outing of the summer golf season at the Bob-O-Link Golf Club at Highland Park on Friday, July 25. Stimulated by advice from Ed Rolaine, chairman of golf activities, salesmen and guests congregated at one of the sportiest clubs in the Chicago district in record breaking numbers. Lunch, golf and dinner again constituted the program line up. The semi-final outing will be held at Jim Coy's home club, the LaGrange Country Club, on August 22 while the final event is slated for Olympia Fields Country Club during the Fall meeting of the National Paper Trade Association.

Discuss Better Packing

The National Retail Dry Goods Association, through the medium of its monthly Bulletin, contains an interesting series of articles on Better Packing which should be checked by paper houses supplying this type of merchandise. The author is Richard D. Ewell, store consultant. The current article discusses the wrapping of items of merchandise such as metal canisters, small roasters, fire screens and similar merchandise by the "open-end corrugated method." An extension of the corrugated beyond the merchandise gives good protection while the thickness of the corrugated materially protects the sides. Mr. Ewell says this method is quick, clean, inexpensive and offers good protection against damage. Chicago reports indicate that these articles and other suggestions to prevent waste in the use of paper are receiving a great deal of attention "as the prices of paper go up."

Chicago To Be Scene of N.P.T.A. Session

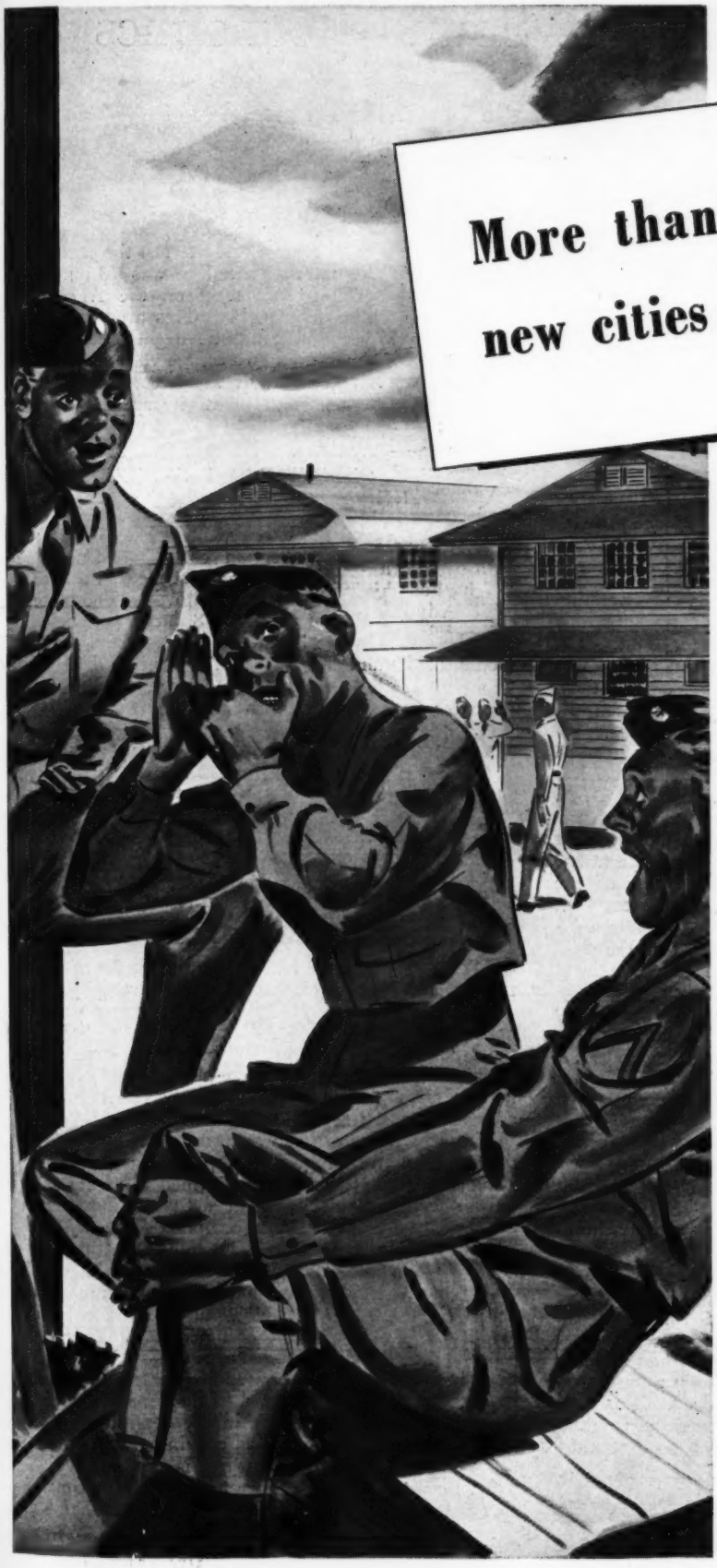
Chicago is expected to be the site of one of the important sectional meetings of the National Paper Trade Association which are slated to be held next month both as a "tune up" for the Fall meetings in Chicago and to bring members in various localities up to date on the fast moving picture with reference to the paper industry. According to local reports, the N.P.T.A. executive offices are finding that members are becoming increasingly interested concerning transportation problems, allocation of mill production, priorities and the publicity given price ceilings. The industry also expects to utilize these key city meetings to thoroughly discuss government requirements for chemicals and other paper making materials and also government needs as far as actual use of paper and paper products is concerned. Paper executives are looking on guidance as to the position of the industry as far as national defense and defense problems are concerned and are expected to take advantage of the chance to learn by attending the Chicago session tentatively slated for the first week in August, possibly August 8. Meetings of this nature are already being held in the East.

Sutter-Kimberly Nuptials

Walter Sutter, of the research staff of the Kimberly-Clark Corporation, and Miss Susan Kimberly of Oshkosh, Wis., were married Saturday afternoon, July 19, at Lincoln Park Lutheran church, Milwaukee, Wis. The couple will make its home at Niagara Falls, N. Y.

New Trufect Line

An interesting mailing piece, timed with the times, makes its appearance in Chicago buyer offices this week. Advertising Levelcoat Printing Papers, the Kimberly-Clark Corporation uses four color work to call attention to "Trufect," one of the feature lines of the Levelcoat group. Described as a new, all-purpose coated paper Trufect's features include fine color, high opacity, proper ink affinity, lack of two sidedness and a smooth, clean, rich appearance. The advertising piece is printed on Trufect, 25 x 38, 70 lb. and is also available in other standard weights and sizes. Chicago outlet is the Midland Paper Company Division of the Zellerbach Paper Company.



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Good Forestry Is Sound Economics*

It Pays to Practice Forestry in Producing Pulpwood

By W. S. Swingler[1]

Abstract

Because practical timber men had questioned the economy of its practice of not cutting below a flexible 8-inch limit (d.b.h.) in producing northern hardwood pulpwood, the Armstrong Forest Company asked the U. S. Forest Service to join with it in getting at the facts on a sample 40 acre tract in northwestern Pennsylvania. Three methods of cutting were employed: the first took all trees 11 inches and over; the second took trees 8 inches and over; and the third included all trees 5 inches and over. Conversion costs in man hours were noted and compared. The difference between the two upper-bracket groups was practically non-existent. But the 5-inch and up group showed an increased conversion cost over these former of slightly more than 51 cents per cord, even after a generous allowance for road costs.

The Armstrong Forest Company has been cutting pulpwood from second growth northern hardwood timber to a flexible eight-inch diameter limit. The company officials were satisfied that this policy was economically sound. However others, among them actual timber cutters, so frequently questioned the desirability of leaving trees below eight inches in diameter that the company decided to make a detailed study of the labor costs involved. Such a practical study was organized in cooperation with the U. S. Forest Service through the Division of State and Private Forestry, Region 7, and the Allegheny Forest Experiment Station. All of the pulpwood operations were carried on by the regular woodcutters of the company working under the supervision of George P. Kramer of the Division of State and Private Forestry. The experiment was designed and the field data computed by Carl E. Ostrom of the Allegheny Forest Experiment Station.

This company owns and manages approximately 50,000 acres of land located near Johnsonburg, Pa. Forty thousand acres of this land are covered with Allegheny hardwoods consisting chiefly of beech, birch, maple, and black cherry. The age classes of the stands range from saplings to virgin timber but the greater portion of the land is covered with second growth trees from 20 to 60 years old.

Although the company makes some sawlog sales from the virgin areas, it is chiefly concerned with producing pulpwood, and since 1936 much of its pulpwood has been cut from the second growth stands. This second growth cutting has been confined to a flexible eight inch diameter limit. E. O. Ehrhart, the company's forester, originally marked for cutting an eight acre sample plot. After the trees were removed from the sample area, each cutter was taken through the residual stand so that he could obtain a first hand knowledge of the type of cutting desired. This procedure, together with subsequent inspections, resulted in the cutters doing a satisfactory job so that most of the land cut since 1936 will produce a similar crop of pulpwood within twenty years.

The experimental area selected to test the economic soundness of the cutting procedure was 40 acres of the company's Wolf Run tract on the Allegheny plateau, near Johnsonburg, Pa. This area was covered with a 43 year old stand of Allegheny hardwood second growth containing an average volume, in trees 5 inches d.b.h. and over, of 20.95 cords per acre. Volume distribution of the stand by species was as follows:

Black Cherry	68%
Sugar Maple	11%
Beech	11%
Red Maple	5%
Others (birch, white ash, hemlock)	5%

The purpose of the experiment was to determine the differences in conversion costs between three methods of cutting. Under the first method all trees 11 inches d.b.h. and over were removed. The second method specified that all trees 8 inches d.b.h. and over be cut. On the balance of the area all trees 5 inches d.b.h. and larger were harvested. The distribution of the merchantable pulpwood volume by diameter groups is shown in Table I.

TABLE I.—PULPWOOD VOLUME PER ACRE IN TREES OF VARIOUS SIZES.

Tree Size Class	Volume Per Acre		Solid Peeled * Pulpwood Per Cord
	Cubic Feet	Cords	Cubic Feet
5.0"- 7.9" d.b.h.	385	4.3	89.0
8.0"-10.9" d.b.h.	613	6.3	97.5
11.0" and up d.b.h.	1,080	10.3	104.6
5.0" and up d.b.h.	2,079	20.9	....

* These factors were obtained during the course of the study.

How Work Was Done

Eighteen plots were laid out in six blocks of three plots each. In each block one of the three plots was 1 acre in size, one was 0.7 acre, and one was was 0.5 acre. Trees were cut to a diameter limit of 11.0" on the 1-acre plots, down to 8.0" on the 0.7-acre plots, and down to 5.0" in the 0.5-acre plots. The difference in plot sizes provided approximately equal volumes of wood per plot regardless of diameter limit.

The actual conversion work was done by three of the two-man crews regularly employed by the cooperating company. Each crew performed all of the work on two complete blocks. The actual differences in conversion time were later computed in the office. This procedure seemed more desirable than the introduction of an artificial method of cutting in the field.

Although every effort was made to simulate the actual conditions under which pulpwood is ordinally cut, it was found that the cost per cord for cutting pulpwood on the experimental area was slightly higher than usual. This was caused by the necessity for moving from plot to plot and to the care that had to be exercised in keeping within the confines of each plot. However, this additional cost in no way affected the relationship between the three methods tested.

There appears to be no great difference in conversion time per cord when cutting to an 8-inch diameter

* Adapted from an unpublished technical manuscript prepared by the Allegheny Forest Experiment Station.

[1] Division of State and Private Forestry, U. S. Forest Service, Region 7.

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limit as compared with an 11-inch limit. However, when the diameter limit was reduced to 5 inches, a significant difference did occur, as shown in Table 2.

TABLE II.—LABOR REQUIRED TO CONVERT PULPWOOD AS INFLUENCED BY DIAMETER LIMITS.

	Time by Diameter Limits Inches			Cost by Diameter Limits * Inches		
Operation	5+ Man-Hours	8+ Man-Hours	11+ Man-Hours	5+ Dollars	8+ Dollars	11+ Dollars
Felling, limbing, and peeling	5.90	4.51	4.33	1.77	1.35	1.30
Bucking and piling..	5.65	5.08	5.25	1.69	1.52	1.57
Total conversion time	11.55	9.59	9.58	3.46	2.87	2.87

* Costs of labor are computed at 30 cents per hour.

Dropping the diameter limit from 8 inches to 5 inches increased the total per acre harvest by 4.3 cords. This advantage was more than offset by the fact that cutting to the 5-inch diameter increased by 20 per cent the conversion time for all wood cut. These figures very effectively discount the often expressed opinion that a landowner or contractor cannot afford to leave any usable products on an area after his roads are constructed. Assuming a cost of 30 cents per hour for labor, the cost of converting trees to pulpwood on the plots cut to 8 inches was 9.59 x $0.30 or $2.88 per cord. The cost on the plots cut to a 5-inch limit was 11.55 x $0.30 or $3.46 per cord. Cutting to an 8-inch limit therefore resulted in a direct saving of $0.58 per cord, over the cost of cutting to a 5-inch limit. This direct saving would, of course, increase in direct proportion with a higher rate of pay.

The amount of road improvement costs on the operations of the Armstrong Forest Company was not a part of this study. However, assuming the relatively high figure of $0.25 per cord, the increase in improvement costs per cord due to the 8-inch minimum would be $.065. Deducting this from the saving of $0.58 leaves a net saving of slightly over $0.51 per cord. As the total amount of improvement costs increases, this net saving is decreased and eventually would disappear. However, in this particular operation, it would be necessary to increase the improvement costs to $2.20 per cord before the savings in operating costs were canceled. If the improvement costs on any pulpwood cutting operation approach such a high figure, the operator had better look elsewhere for his pulpwood.

TABLE III.—CONVERSION TIME PER UNIT VOLUME BY DIAMETER GROUP

	Conversion Time					
	Per Cord by Diameter Groups Inches			Per 100 cubic feet of Solid Wood by Diameter Groups Inches		
Operation	5-7.9 Man-Hours	8-10.9 Man-Hours	11+ Man-Hours	5-7.9 Man-Hours	8-10.9 Man-Hours	11+ Man-Hours
Felling, limbing, and peeling	8.68	4.69	4.33	9.76	4.81	4.14
Bucking and piling..	6.78	4.92	5.25	7.62	5.05	5.02
Total conversion time	15.46	9.61	9.58	17.38	9.86	9.16

TABLE IV.—RELATIVE CONVERSION TIME PER UNIT VOLUME BY DIAMETER GROUP. (THE TIME FOR THE 11 INCHES + GROUP IS TAKEN AS 100 PERCENT)*

	Relative Conversion Time—% of 11"+ Group					
	Per Cord by Diameter Groups Inches			Per 100 cubic feet of Solid Wood by Diameter Groups Inches		
Operation	5-7.9	8-10.9	11+	5-7.9	8-10.9	11+
Felling, limbing, and peeling	200	108	100	236	116	100
Bucking and piling..	129	94	100	152	101	100
Total conversion time	161	100	100	190	108	100

* Based on data in Table III.

The differences in cost are even more striking when the operating costs are segregated by diameter groups as shown in Tables 3 and 4.

These tables show more distinctly the effect of lowering the diameter limit, for the effect on the unit conversion time as shown in Table 2 is dependent upon the percentage of the total volume which occurs in different diameter groups, and therefore varies from stand to stand. The results of the study, as shown in these tables are of special significance to the operator or land owner who follows the practice of harvesting his timber as quickly as his land supports a predetermined minimum volume. In such cases, the great percentage of the trees fall within the 5 to 8-inch diameter group. As can be seen from the above tables, the cost of converting pulpwood from such areas is increased by 61%.

These tables, together with column 2 of Table 1 are also of special interest to the companies purchasing pulpwood. The amount of solid wood per cord varies in direct proportion to the changes in diameter limits; and, solid wood is the stuff from which pulp is made.

The results of the study were also computed in terms of number of trees per cord as follows:

TABLE V.—RELATION OF NUMBER OF TREES PER CORD TO DIAMETER GROUP AND TO DIAMETER LIMIT.

Diameter Group	No. of trees per cord	Diameter Limit	No. of trees per cord
5.0"- 7.9"	22.95	5.0"	10.35
8.0"-10.9"	9.24	8.0"	6.05
11.0" and over.....	4.33	11.0"	4.57

It is axiomatic that the cost of producing pulpwood rises in direct proportion to an increase in the number of trees required for each cord. As shown by Table 4, it takes twice as long to cut, limb, and peel a cord of wood from trees 5-8" as it does from trees 11 inches and larger.

This study shows conclusively that:

1. There is a very definite cash saving in cutting hardwood pulpwood in Pennsylvania to an 8-inch diameter limit rather than to a 5-inch limit.

2. The pulp producing companies will receive an appreciably higher amount of solid wood if their cutting or purchasing is limited to wood from trees 8 inches d.b.h. and larger.

In addition to these two advantages, the policy of limiting the cut to trees over 8 inches will result in materially reducing the time required to grow a second crop. The Armstrong Forest Company believes that the policy will reduce its interval between harvests from 35 years to 20 years. This reduced interval has a direct bearing on the per cord costs for production, overhead and taxes.

Australia Cuts Newsprint Use

Effective July 1 the size of Australian newspapers was further restricted. Voluntary rationing now operating, saved 33% on newsprint consumption during the year, compared with two years ago. Additional restrictions will save 35,000 to 45,000 tons of newsprint a year which, added to the existing curtailment, will save a maximum of 103,000 tons a year. This, in effect, means Australian publishers have reduced their consumption of newsprint paper by about 50% since the start of the war.

N. P. T. A. Holds Many "Industry" Meetings

Program Conducted By National Paper Trade Association In Key Distributing Cities Informs Merchants of Changing Conditions Due To National Emergency—Meetings To Continue In August.

The "industry" meetings being conducted by the National Paper Trade Association, Arthur H. Chamberlain, secretary, 220 East 42nd street, New York, has accomplished much to inform the distributors of paper with the changing national economy.

Purpose of the Meetings

It is the purpose of these meetings to outline the position of the paper merchant in the current emergency and to advise as to probable future developments. The production and consumption figures for the first six months of the current year were analized. The tremendous demand for paper occasioned by Government purchases and national defense requirements were interpreted as they pertain to merchant requirements for commercial deliveries.

Schedule of Meetings

The schedule of these meetings, some of which have already been held is as follows:

July 16, Allentown, Pa., Traylor Hotel.
July 17, Philadelphia, Pa., Drexel Building.
July 17, New York, Pennsylvania Hotel.
July 21, Boston, Mass., Chamber of Commerce.
July 22, Syracuse, N. Y., Hotel Syracuse.
July 23, Rochester, N. Y., Rochester Club.
July 24, Buffalo, N. Y., Buffalo Athletic Club.
July 25, Albany, N. Y., De Witt Clinton Hotel.
August 4, Cleveland, Ohio, MidTown Club.
August 5, Pittsburgh, Roosevelt Hotel.
August 6, Detroit, Mich., Detroit Leland Hotel.
August 7, Cincinnati, Ohio, Sinton Hotel.
August 8, Chicago, Ill., Bismark Hotel.

Possibility of Curtailment of Stocks

Transportation, requirements for chemicals, etc., were discussed to inform merchants as to future expectancy of further curtailment of paper stocks.

The significance of the necessity for the paper merchants' operations in order to insure a free flow of paper supplies, to not only national defense needs, but also to commercial consumption needs, has been outlined.

It was further brought out in the meetings that merchants must necessarily operate along the same lines as their sources in providing proper allotments of paper to their customers. It was also explained to paper merchants that they would have representation in a sub-committee to the national defense advisory committee for the pulp and paper industry to the Office of Production Management.

The function of this sub-committee will be in a purely advisory capacity and the merchants are extending their whole hearted cooperation to that end.

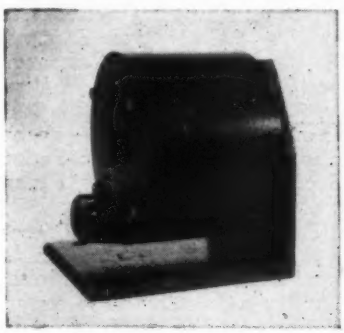
Other Pertinent Problems

At all of these meetings certain pertinent problems which the paper merchants are facing are discussed, with regard to the availability of supplies.

Paper merchants' sales reached the highest point for the month of June for any month recorded. Buying for the first half of the current year, for all paper products, was approximately 30% higher than for the same period in 1940.

New Tachometer Has Many Uses

For use in measuring revolutions per minute, feet per hour, gallons per minute in any manufacturing plant where rotating equipment is used, a new alternating current tachometer is announced by Westinghouse Electric and Manufacturing Company. Known as Type A-80, the tachometer consists of an alternating current generator and a voltmeter of the rectifier type. No brushes or commutator are used in the generator which is of the permanent magnet, a-c inductor type. To insure permanency of calibration the magnets are made of high grade magnet steel and are carefully aged. The rotating element consists of laminated iron keyed to a rust resisting steel shaft. Laminations are slotted to permit variation of the air gap reluctance when the shaft is rotated. This in turn varies the flux linking the voltage coils and induces an alternating voltage in the coils. The alternating voltage is rectified by a Rectox unit in the voltmeter calibrated in rpm, feet per hour, or other units depending on the application. Although the best generator speed is 1000 rpm., the tachometer is recommended for operation over a range of from zero to 5000 rpm. This range may be obtained, if necessary, by suitable pulleys, gears, or sprockets. Over-all tachometer accuracy is —½ per cent of full scale.



Improved Pressure Reducing Valve

Northern Equipment Company, Erie, Pa., announces an improved design of the Copes Type R-DSLH Pressure Reducing Valve, a relay-operated unit used for remote control from a Master Controller. The principal changes have been in the mounting of the diaphragm operator receiving pressure impulses from the master, and in the linkage by which diaphragm movement is transmitted to the relay operator of the valve. These parts have been strengthened and arranged more compactly to assure more rugged installation and more accurate installation. The valve can now be furnished in sizes from 1- to 14-inch, and in all pressure standards from 125- to 1500-pound.

Government Paper Bids and Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 30, 1941—Government Printing Office has received the following bids for 122,878 pounds of 14 x 19 white offset book paper: Paper Corp. of U. S., 7.85 cents; and R. P. Andrews Paper Company, 7.65 cents.

For 20,542 pounds of 24¼ x 35 green calendered tag board: Paper Corp. of U. S., 9.75 cents.

For 37,500 pounds of 26 x 38 newsboard: Mudge Paper Company, 2.379 cents; Whitaker Paper Company, 2.36 cents; Virginia Paper Company, 2.37 cents; Resolute Paper Products Corp., 2.4255 cents; Old Dominion Paper Company, 2.369 cents; Stanford Paper Company, 2.5 cents; R. P. Andrews Paper Company, 2.57 cents; and Barton, Duer & Koch Paper Company, 2.375 cents.

For 10,000 sheets of 22 x 28 green railroad board: Barton, Duer & Koch Paper Company, $32.15 per M sheets; Mathers-Lamm Paper Company, $36.85; R. P. Andrews Paper Company, $32.47; Paper Corp. of U. S., $33.80; Old Dominion Paper Company, $32.469; Mudge Paper Company, $36.85; and Virginia Paper Company, $35.50.

For 718,750 pounds of 19 x 24 offset book paper: Mudge Paper Company, 7.55 and 7.4 cents; Paper Corp. of U. S., 7.75 cents; R. P. Andrews Paper Company, 7.45 cents; Stanford Paper Company, 7.85 cents; and Marquette Paper Company, 7.74 and 7.88 cents.

For 55,352 pounds of 22 x 34 white plate finish cover paper: Marquette Paper Company, 12.48 cents; Stanford Paper Company, 10.62 cents; R. P. Andrews Paper Company, 10.76 cents; and Paper Corp. of U. S., 10.95 cents (sulphite) and 11.95 cents (25% rag).

Whitaker Paper Company has been awarded the contract for furnishing the Government Printing Office with 10,000 sheets of 20 x 26 red on one side glazed paper at $9.08 per M sheets, bids for which were received on July 11.

R. P. Andrews Paper Company will furnish 122,000 pounds of 28 x 34 white sulphite writing paper at 7.4 cents, bids for which were received on July 9.

Graham Paper Company will furnish 92,355 pounds of 50% rag, 34 x 54 white ledger paper at 13.59 cents, bids for which were received on July 1. Other paper awards announced include the following:

Paper Corp. of U. S. will furnish 11,640 pounds of 21 x 32½ buff sulphite index paper at 8.25 cents. Mudge Paper Company will furnish 33,800 pounds of 28 x 41 dull coated book paper at 8.95 cents.

R. P. Andrews Paper Company will furnish 104,200 pounds of 24 x 38 yellow sulphite writing paper at 9.28 cents. Same company will also furnish 86,000 pounds of 20 x 25 tan bristol board at 11.05 cents. Andrews Company will also furnish 60,000 sheets of 20 x 25 tan bristol board, cellulose coated at $8.04 per hundred sheets. And 130,400 pounds of 25 x 38 uncoated tan bristol board at 11.05 cents.

Fires Damage Large Areas in Quebec

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., July 28, 1941—Now that the forest fires which ravaged large areas in Quebec Province have been extinguished, some thousands of soldiers being among those engaged in the task, the Lieut.-Governor, Major-General Sir Eugene Fiset, has issued an urgent appeal for extreme vigilance on the part of the public during the remaining months of forest fire hazard. It is estimated that in the Laurentian area north of Montreal fires caused a dead loss of at least $5,000,000 in ruined timber, while losses in the Lake St. John and Chicontimi region were even heavier. In his statement Sir Eugene Fiset says:

"Forest fire destruction has visited the Province of Quebec, as elsewhere in Canada, to a very severe degree during May and June this year. The loss falls upon all classes of our people, for there is no natural resource that extends its benefits so widely as the forest. No matter in what region a timbered area goes up in flames, the people of the whole province participate in the tragedy, and inevitably must take their share of the economic damage.

"Thousands of fire fighters have been called upon in recent weeks to counteract the reckless deeds of a handful of persons, thoughtless enough to cause widespread injury to their native province. Such conduct brings no gain to the guilty party and is condemned by every standard of decent citizenship. I am glad to make this appeal to all who value the welfare of the people of Quebec to be vigilant and active in forest fire prevention during the remaining months of fire hazard."

Insulite Becomes M. & O. Division

R. H. M. Robinson, president of the Minnesota and Ontario Paper Company, has announced the absorption of the Insulite Company operations by the parent organization. This change was undertaken to simplify the corporate structure of the parent organization, and hereafter all Insulite activities will be carried on by the Insulite Division of the Minnesota and Ontario Paper Company.

The new order will go into effect immediately, with no change in personnel, policy or sales activities. E. W. Morrill, sales manager, and his entire staff will continue sales operations as the Insulite Division of Minnesota and Ontario Paper Company.

The Insulite Company pioneered the manufacture of the first rigid structural insulating board, and placed the new product on the market in 1914.

Since that time Insulite has developed a national acceptance in home building, modernizing, and many other uses.

Titanium Pigment To Build

The Titanium Pigment Company, 111 Broadway, New York, N. Y., manufacturer of titanium pigment products for the paper and other industries, and allied specialties, has approved plans for new plant at Tehawus (Essex County), N. Y. where large tract of land has been selected. It will comprise several large production units, with storage and distributing buildings, machine shop, power station and miscellaneous buildings. A housing development also will be carried out for employes at mill, with large group of dwellings and other community buildings. Entire project is reported to cost over $5,000,000, with equipment. General contract for erection has been awarded to the Wigton-Abbott Corporation, 60 East Forty-second street, New York, and work is scheduled to be placed under way at once. Archer E. Wheeler, 25 Broadway, New York, is metallurgical engineer for project. Company is affiliated with the National Lead Company, first noted address.

Buys Paper Under Walsh-Healey Act

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 30, 1941—During the week ending July 12, the government purchased $939,414 worth of paper under the Walsh-Healey act with the following orders:

$10,696 worth of ledger paper for War, Engineering, D. C., from R. P. Andrews Paper Company; $33,736 worth of manifold paper for War, QMC, Chicago, from Paper Corporation of U. S.; $15,360 worth of tracing paper for War, Engineering, D. C., from Georce F. Muth Company; $10,336 worth of manifold paper for War, QMC, Texas, Import Paper Company; $189,608 worth of napkins and wrapping paper for War, Medical, Brooklyn, from L. Hyman & Sons; $11,460 worth of chipboard filler for War, Ordnance, Utah, from Vernco Specialties Co.; $87,360 worth of drawing paper for War, Engineering, D. C., from Charles Bruning Company; $14,962 worth of drawing paper for War, Engineering, D. C., from the same company; $28,076 worth of tracing paper for War, Engineering, D. C., from the same company; $44,793 worth of drawing and tracing paper for War, Engineering, D. C., from the same company; $31,550 worth of printing paper for War Air Corps from R. P. Andrews Paper Company; $11,600 worth of file folders for War, QMC, New Jersey, from Globe-Wernicke Company; $12,551 worth of ledger paper for Government Printing Office from Graham Paper Company; $10,237 worth of unsensitized blueprint paper for Treasury Procurement Division from R. P. Andrews Paper Company; $65,845 worth of packing cartons for War, Ordnance, New Jersey from John Crompton Adelphia Corporation; $210,806 worth of mimeo paper for War, QMC, New Jersey, from R. P. Andrews Paper Company; $28,634 worth of paper pads for War, QMC, New Jersey, from Mathers-Lamm Paper Company; $111,642 worth of mimeo paper for War, QMC, New Jersey, from Barton, Duer & Koch Paper Company; $10,157 worth of cards, folders for War, QMC, New Jersey, from Crownola Loose Leaf Products Company.

Childsdale Mill Sold

GRAND RAPIDS, Mich., July 28, 1941.—Sale of the old Childsdale paper mill on the Rogue river near Rockford and 14 miles north of Grand Rapids, originally founded in 1866 by H. B. Childs & Co., to Herman Gumbin of Chicago, veteran paper manufacturer, formerly active in the Kalamazoo valley paper industry and now vice president of the General Fibre company of Chicago, has been announced Monday by William R. McCaslin, receiver for the American Home Security bank. The bank, which held a mortgage on the property, originally foreclosed it about 15 years ago and repossessed the property last spring.

Consideration for the sale was $30,000, of which $5,000 is to be paid at once. The purchaser further agrees by terms of the sale to install $15,000 worth of new machinery and give a chattel mortgage on this equipment to the receiver of the bank as additional security on the unpaid balance of the purchase price.

The mill, located in one of the most scenic spots in Kent county, has not been in active production in 10 years or more, said John B. Cassleman, industrial commissioner for the Grand Rapids Association of Commerce, who worked with the intermediary for Gumbin and his associates in developing the sale.

An estimate was made by the receivership that the mill, which Mr. Gumbin plans to put in operation within from 90 to 120 days, would employ 30 to 35 men.

Order approving the sale was signed Monday afternoon by Circuit Judge William B. Brown. Approval of the state banking department had been previously obtained. Atty. Joseph E. Arsulowicz represented the receivership in the transaction and Atty. James T. McAllister the purchaser.

To Handle Newsprint Shipments

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 30, 1941—In connection with a number of meetings held here last week for the appointment of three committees advisory to OPM dealing with paper it has become known that a subcommittee of the so-called Pulp and Paper Defense Advisory Committee will be formed to take care of newsprint shipments because of the belief in the minds of many that a bad transportation situation may develop.

Charles W. Boyce of the paper staff of OPM said that rail transportation is not yet seriously lacking but the situation is expected to become serious as rail cargo facilities become congested with defense shipments.

In response to an inquiry on whether a priority order might be issued for the transportation of newsprint Mr. Boyce said that OPM would take whatever action is necessary to insure deliveries. He said however that OPM priority division has no priority in view in connection with newsprint paper.

It was stated here during the course of the various paper meetings last week that chlorine deliveries to paper manufacturers have already been cut some 10 per cent under voluntary agreement. OPM has not imposed any mandatory restrictions, but its technicians are said to be working with industry representatives on plans to conserve more chlorine.

F. D. Gottwald Heads Albemarle Paper

At a meeting of the board of directors of the Albemarle Paper Manufacturing Company, Richmond, Va., F. D. Gottwald was elected president of the company, succeeding the late H. Watkins Ellerson.

During the illness of Mr. Ellerson, who was president of the firm from 1907 until his death in May, Mr. Gottwald was elected executive vice-president. He joined the paper company's export department in 1917, later served as production manager, and in 1934, was elected secretary of the company. In April, 1937, Mr. Gottwald was named to the position of vice-president.

P. A. Hayward To Represent Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 30, 1941—Through Phillips A. Hayward, forest products specialist, the Department of Commerce will be represented on the industry advisory committees to the commodity sections in the OPM whenever action affecting the paper and pulp industries is considered.

The department said that the function of its industry specialist will be to advise the government on industrial problems and help businessmen comply with the defense effort.

CONSTRUCTION NEWS

Johnsonburg, Pa.—The Castanea Paper Company, 230 Park avenue, New York, N. Y., manufacturer of book and kindred paper, has completed plans for new addition to pulp mill at Johnsonburg, consisting of a one-story and basement structure, about 70 x 170 feet, to be used for increased production in sulphite mill division. Cost estimated close to $125,000, including equipment. General erection contract has been awarded to the John W. Ferguson Company, 152 Market street, Paterson, N. J., and work is scheduled to begin at once. Structural steel framing will be furnished by M. L. Claster & Sons Company, Lock Haven, Pa.

Los Angeles, Calif.—The Schumacher Wall Board Company, Inc., 4301 Firestone boulevard, South Gate district, manufacturer of wall board and allied products, has approved plans for one-story addition to mill, estimated to cost close to $25,000, with equipment. General contract for erection has been awarded to MacIsaac & Menke, 3445 Union Pacific avenue, Los Angeles, and work will proceed at once.

Vancouver, Wash.—The Columbia River Paper Mills, Inc., manufacturer of writing and other paper stocks, newsprint, tissue stocks, etc., has plans for new addition to mill for expansion in main paper-making division, consisting of a one-story structure, reported to cost close to $100,000, including equipment. A new paper-making machine will be installed, and auxiliary apparatus. Company has taken out a permit for erection, and work is scheduled to begin at early date.

Seymour, Conn.—Frederick L. Smith is the engineer for the two storage buildings which were mentioned in the PAPER TRADE JOURNAL last week as being erected by the Pond's Extract Company at its paper plant at this place.

Cincinnati, Ohio—The Paper Service Company, Station avenue, Arlington Heights, manufacturer of paper bags and other containers, has superstructure in progress on new two-story plant unit, about 60 x 100 feet, on Carthage avenue, in vicinity of present plant, recently referred to in these columns. It is proposed to have building ready for occupancy soon. M. J. Roche Construction Company, Shaw avenue and Wasson road, is general contractor. Cost is estimated close to $75,000, with equipment, which will provide for considerable increase in present capacity.

Savannah, Ga.—The Rathborne, Hair & Ridgway Company, 1440 West 21st place, Chicago, Ill., manufacturer of corrugated cartons and other boxes and containers, has acquired property on Louisville road, Savannah, and will occupy for new branch plant. Improvements will be made in an existing building and equipment installed at early date.

Shortsville, N. Y.—Grand Bag and Paper Company, manufacturer of paper bags and containers, plans rebuilding of portion of plant recently damaged by fire, with loss reported at about $12,000.

Plymouth, Wis.—The Cleveland Container Company, 10630 Berea road, Cleveland, Ohio, manufacturer of paper cans, tubes, boxes, etc., fiber drums and allied products, has approved plans for new addition to branch plant at Plymouth, consisting of a one-story structure, 104 x 175 feet, to be used for storage and distribution. Cost estimated over $60,000, with equipment. Erection contract has been awarded to Peter Welling, Plymouth, and work will be placed under way at once. E. A. Stubenrauch, 708 Erie avenue, Sheboygan, Wis., is architect.

Baltimore, Md.—S. Schapiro & Sons, Inc., 1600 Union avenue, waste paper products, has awarded general contract to Edgar A. Levi, 2309 Sulgrave avenue, Baltimore, for proposed new addition to plant, recently referred to in these columns, consisting of a one-story structure, reported to cost about $40,000, with equipment. It will be used for storage and distribution. Erection will be placed under way at once. Carl J. Kiefer & Associates, Inc., Schmidt Building, Cincinnati, Ohio, is architect and engineer.

Philadelphia, Pa.—Fire recently damaged a portion of plant of E. W. Twitchell, Inc., Third and Somerset streets, manufacturer of paper tubing and other paper products. An official estimate of loss has not been announced. The damage will be replaced.

Everett, Wash.—The Everett Pulp & Paper Company, manufacturer of writing, book and other paper products, has approved plans for new three-story building at mill, 45 x 72 feet, to be used for office and general operating service. It is estimated to cost close to $50,000. Erection contract has been let to Howard S. Wright & Company, 407 Yale avenue North, Seattle, Wash., and erection will begin at once. Earl W. Morrison, Textile Tower Building, Seattle, is architect.

Grand Rapids, Mich.—The American Box Board Company, manufacturer of box boards, test liners, etc., is running on a capacity schedule, with incoming orders considerably in excess of production. Contracts from food packers are averaging about 90 per cent of current business. It is expected to hold to present manufacturing schedule for an indefinite period; advancing backlog of orders is now equivalent to about a month's continuous run.

Middletown, Ohio—The Gardner-Richardson Company, manufacturer of paper board products, box board, etc., has approved plans for new addition to mill to be used for general shop service. It will be one-story, reported to cost over $35,000, with equipment. Erection contract has been awarded to B. D. Morgan & Company, Bellemonte avenue, Middletown, and work will be placed under way at once.

Rome, Ga.—The Tubize Chatillon Corporation, 2 Park avenue, New York, manufacturer of cellulose rayon products, has begun construction of a new chemical recovery plant at branch mill, to handle various chemicals used in processing operations at plant. This is part of a large expansion program now in progress at the Rome mill, previously referred to in these columns, consisting of a main one-story unit, about 100 x 800 feet, and several auxiliary buildings, to be equipped for large increased output. Entire project will cost over $1,500,000, with machinery. A. K. Adams Company, 542 Plum street, N.W., Atlanta, Ga., has the general erection contract. Robert & Company, Bona Allen Building, Atlanta, are architects and engineers.

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending July 30, 1941

	High	Low	Last
A. P. W.	1⅝	1½	1⅝
Armstrong Cork Co.	29	28⅛	28¾
Celotex Corp.	9½	9	9⅛
Celotex Corp., pf.	69¼	67¾	67¾
Certain-Teed Products Corp.	3¼	3⅜	3⅜
Certain-Teed Products Corp., pf.	34	32½	33
Champion Paper & Fibre Co.	21¼	21	21
Champion Paper & Fibre Co., pf.	103½	102¾	103½
Congoleum-Nairn Co.	16⅝	15⅝	16½
Container Corp. of America	16½	16¼	16¼
Continental-Diamond Fibre Co.	9	8⅝	8⅝
Crown-Zellerbach Co.	14⅝	13⅞	14⅛
Crown-Zellerbach Co., pf.	87	86½	87
Flintkote Co.	15⅛	14½	14⅝
Robert Gair	2½	2⅛	2⅛
Robert Gair, pf.	10⅜	10⅛	10⅜
International Paper & Power Co.	18⅝	17⅝	18½
International Paper & Power, pf.	67¾	66½	67
Johns-Manville Corp.	67½	66	66
Johns-Manville Corp., pf.	128	127¾	128
Kimberly-Clark Corp.	31⅝	29½	31⅝
MacAndrews & Forbes	25⅞	25⅞	25⅞
MacAndrews & Forbes, pf.	....	....	....
Masonite Corp.	24½	24	24
Mead Corp.	9⅜	8⅞	9
Mead Corp., pf.	....	....	....
Paraffine Companies, Inc.	30⅝	30½	30⅝
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	18½	15⅞	17
Rayonier, Inc., pf.	29	28	28
Rubberoid Co.	18	17¾	18
Scott Paper Co.	36½	35½	36½
Scott Paper Co., pf.	113¾	112⅝	113½
Sutherland Paper Co.	22	22	22
Union Bag & Paper Corp.	12¼	11¾	12
United Paperboard Co.	4	4	4
U. S. Gypsum Co.	63½	61	62
U. S. Gypsum Co., pf.	....	....	....
West Virginia Pulp & Paper Co.	20¾	20	20¼

New York Curb Exchange

High, Low and Last for Week Ending July 30, 1941

	High	Low	Last
American Box Board Co.	....	....	....
Brown Co., pf.	19¾	19	19½
Great Northern Paper Co.	39	37½	39
Hummel-Ross Fibre Corp.	6¼	6⅛	6¼
National Container Corp.	12⅛	12	12
St. Regis Paper Co.	2¼	2⅛	2¼
St. Regis Paper Co., pf.	97¾	96	97¾
Taggart Corp.	3⅛	2¾	2¾

Crown-Zellerbach Nets $2.75

The Crown-Zellerbach Corporation reports the best earnings of any year in its history.

The annual statement covering the fiscal year ended on April 30 showed consolidated net profits of $8,866,287, equal, after preferred dividends, to $2.75 a share on 2,261,199 shares of common stock. For the preceding fiscal year they were $8,119,494, or $2.42 a common share.

Provision for United States Government and Canadian taxes on income, including excess profits taxes, totaled $5,718,000, compared with $2,204,807 the year before. The consolidated profit before deduction for these taxes, but after charges for minority interests, amounted to $14,584,287, against $10,324,301 for the fiscal year ended on April 30, 1940. The total tax bill of the company and its subsidiaries was $7,544,000, or 100 per cent above the total of the preceding year.

Consolidated net sales for the year increased to $66,217,406 from $56,526,576 for the previous fiscal year.

Oswego Falls Profits Up

The Oswego Falls Corporation for the six months to June 30, reports a net income of before provision for Federal income taxes, $461,120, against net of $303,646 on same basis, last year.

M. & O. Makes Good Report

Minnesota and Ontario Paper Company reports the following consolidated earnings, including those of its directly or indirectly wholly-owned United States and Canadian subsidiary companies, for the quarter ended June 30, 1941 and for the six months' period. These figures have been prepared by the Company's accounting staff and have not been audited by certified public accountants.

Provision for income and excess-profits taxes has been made on the basis of the best available information as to rates likely to be applied against 1941 incomes:

	Quarter Ended June 30, 1941	6 Months Ended June 30, 1941
Net Sales (including railroad revenue).	$5,365,405.62	$9,573,528.36
Cost of Sales (a) (b)	4,012,184.75	7,728,040.07
Gross Profit on Sales	$1,353,220.87	$1,845,488.29
Selling, Administrative & General Expense	442,791.97	821,152.77
Net Profit on Sales	$910,428.90	$1,024,335.52
Other Income—Net	156,257.62	204,831.80
	$1,066,686.52	$1,229,167.32
Provision for Income and Excess-Profits Taxes	421,900.00	445,900.00
Net Income before Bond Interest	$644,786.52	$783,267.32
Deduct Interest on Income Mortgage Bonds	140,596.27	293,096.28
Net Income after Interest	$504,190.25	$490,171.04

(a) Includes Depreciation for the Quarter of $298,593.94 and for the six months' period of $598,374.89.

(b) Depletion of $14,982.24 for the Quarter and $230,009.80 for the six months' period on the 1940-41 season's cut off Company-owned lands has been accrued and credited to Depletion Reserve and will be absorbed in Cost of Sales throughout the year.

The following items of importance respecting the operations are reported by R. H. M. Robinson, president:

(1) The power situation at International Falls and Fort Frances has been much improved by heavy rains in late May and June and may presently be considered normal.

(2) Sinking Fund payments under the Income Mortgage for the year 1940 have now been fully satisfied.

(3) The capital stock of the Finnish Insulite Company has been sold and payment has been received in United States dollars. Finmarks owing upon the intercompany account by the Finnish Insulite Company to the Insulite Company of Minnesota (a wholly owned subsidiary of Minnesota and Ontario Paper Company) are now blocked and probably will continue to be blocked for the duration of the war. Effort is being made to sell the capital stock of the remaining foreign sales subsidiaries, but governmental restrictions have so far prevented that accomplishment.

(4) Court hearings on applications for allowances in connection with the administration and the reorganization of the predecessor company were had during this month. Decision respecting these matters is not expected before autumn.

Dennison Drops Loan Plan

Directors of the Dennison Manufacturing Company, Framingham, Mass., have announced that in response to their invitation for tenders dated June 18,

1941, 4820 shares of debenture stock and 3336 shares of prior preferred stock have been offered and accepted.

Because the amount of stock tendered was less than contemplated in the plan of financing the directors have decided not to consummate the 15-year loan plan described in the letter of June 18 but to use the company's available cash and whatever short-term or long-term borrowing may be necessary to purchase the stock tendered.

Under the loan plan, the company had arranged to borrow $1,000,000 or such part as may have required to accept tenders which complied with the company's conditions. The interest rate was to have been 3¼ per cent per annum with the notes maturing in five installments in 3-year periods on July 15, 1944, 1947, 1950, 1953, and 1956.

Gair Earns $586,411

The Robert Gair Company, Inc. and United States subsidiaries report for the six months ended June 30, 1941, profit, after depreciation, interest and dividends of subsidiary company, and reserve for federal income taxes but before interest on income notes, of $586,411.41.

Provision for federal income taxes includes $176,900.00 determined in accordance with the revenue acts of 1940 and $45,000.00 estimated for anticipated increase in federal taxes. No provision has been made for excess profits tax as none is required on the basis of the present statutes. However, such taxes may become payable in the event that certain proposals now under consideration by Congress are enacted.

Gair Company Canada Limited, wholly owned subsidiary of Robert Gair Company, Inc., reports for the six months ended June 30, 1941, profit of $121,180.92 in Canadian dollars, after provision of $105,000 for Dominion and Provincial income taxes.

Due to the discount on exchange of Canadian dollars into United States currency, issue of a consolidated statement of earnings is impractical.

Kimberly-Clark Nets $3.51

The Kimberly-Clark Corporation, Neenah, Wis., reports a profit of $3.51 per share of common stock for the 12 months ended June 30, compared with $4.69 per share during the corresponding period last year.

Net income, before provision for federal taxes, was $3,240,680.03. The reserve for taxes is set up at $904,741, leaving a net of $2,335,939.03. The profit is based on 488,173 shares of outstanding common stock.

Year's sales were $31,158,097.87, and for the six-month period ended June 30 they were $16,718,863.44.

Total annual income before bond interest was $3,598,387.31.

Soundview Earns $1.37

The Soundview Pulp Company for the six months to June 30, reports a net income of $967,473 or $1.37 a share, against $1,161,223 or $2.24 a share last year. June quarter: Net income, $478,056 or 93 cents a share, against $489,417 or 94 cents a share in March quarter and $624,187 or $1.21 a share in the quarter ended June 30, 1940.

Container Corp. Profit Up

The Container Corporation of America reports for the June quarter a net profit, after $506,647 provision for Federal and excess profits taxes of $663,649, equal to 85 cents a share on 781,253 capital shares. This compares with preceding quarter earnings of $497,042, or 64 cents a share, and net of $509,100 after $296,270 provision for Federal and excess profits taxes, or 65 cents a share, in quarter ended June 30, 1940. Six months to June 30: Net profit, $1,160,691, or $1.49 a share, against adjusted net of $939,761, or $1.20 a share, last year; sales, $18,363,000, rose 27 per cent from $14,485,000 volume for corresponding six months a year ago.

National Gypsum Nets 26 Cents

The National Gypsum Company and subsidiaries for the three months ended June 30, 1941, reports a net income of $423,792, after taxes and charges, equal after preferred dividends to 26 cents a share on 1,321,458 common shares; preceding period $266,255 and 15 cents a share; year ago $517,091 and 35 cents a share; six months' net income $690,047 after taxes and charges, equal after preferred dividends to 41 cents a share on 1,321,458 common shares; year ago $607,636 and 37 cents a share.

Whitaker Votes $1.75 Dividend

The board of directors of the Whitaker Paper Company has declared the regular quarterly dividend of $1.75 on preferred stock and $1 on common stock. It will be paid October 1 to shareholders of record, September 15.

In a report to the meeting, H. F. Hewitt, secretary, stated that from January 1 to June 30 of this year, the company's total earnings, after all taxes were paid, were $178,165. During the same period a year ago, the total was $119,039.

Mac Sim Bar Earns 25 Cents

The Mac Sim Bar Paper Co. reports a net profit of $74,733.97 for the first half of 1941, after provisions for taxes on income and depreciation, equal to approximately 25c per share on capital stock outstanding. This compares with $44,395.73 or 15c per share for the first half of 1940. Current assets were $782,257.13 including $159,005.92 cash and government's, compared to total current liabilities of $94,178.11.

Hinde & Dauch Earns $1.21

The Hinde & Dauch Paper Company and subsidiaries for the six months to June 30, reports a net profit of $525,500, equal after preferred dividend requirements to $1.21 a share on 360,250 common shares, compared with revised net of $462,319, or $1.03 a common share, last year; sales, $9,343,881, against $7,111,097.

Oxford Nets 57 Cents

The Oxford Paper Company for the six months to June 30, reports a net income of $474,922, equal after preference dividends to 57 cents a share on 380,735 common shares, against $437,134, or 48 cents a common share, last year.

Dehydrated Foods in Pliofilm

Packaging of dehydrated foods, including soup mixes, in Pliofilm containers, gives promise of proving to be one of the most important economic developments of the food industries in recent years. Through packaging of dehydrated soup ingredients in Pliofilm, which protects the package contents from absorption of moisture, all of the essentials for a quart of soup except the water, may be delivered to the consumer in a package approximately 4½ by 5½ inches, less than an inch thick. Contents average 2½ ounces and the entire package, contents and all, averages less than three ounces.

That the packaging of dehydrated soup mixes in Pliofilm containers is no idle "experiment" or passing fad, is evidenced by the report of Goodyear Tire and Rubber Company, maker of Pliofilm, that a single well known western company recently placed an order for Pliofilm to make 100,000,000 packages of their soup mixes.

Stores of Atlantic and Pacific Tea Company, and various other chain store organizations already have began national distribution of Pliofilm packaged, dehydrated soup mixes. Acceptance has been good by both merchants and consumers.

Quality of the soup is such that several of New York's swankiest restaurants, boasting noted chefs, do not hesitate to serve it. Cost, on the basis of straight retail sale is low (packages for quart of soup usually sell at 10 cents each, or three for a quarter).

Occupying small space on grocers' shelves or display counter—or in the consumers' cupboard or pantry, a good variety of mixes is convenient to keep on hand. Taste is excellent and the soups also taste natural. Other important dehydrated food products being packaged in Pliofilm containers include bakers yeast, buttermilk, molasses, malt, malted milk—and many others soon will be on the market.

B. C. Forest Branch Adds Major Unit

British Columbia forest branch added a major unit to its equipment in the summer war against fire recently, when the new service depot for Vancouver forest district was formally opened by Hon. A. Wells Gray, Minister of Lands.

The depot, on the North Arm of the Fraser at the foot of Blenheim street, Vancouver, has yards for servicing and repair of the 40-odd launches and express cruisers operated by the branch along the coast. In addition, the 150 by 100-foot building, raised under contract by Ward & Son of New Westminster, houses the main radio-telephone station for the district.

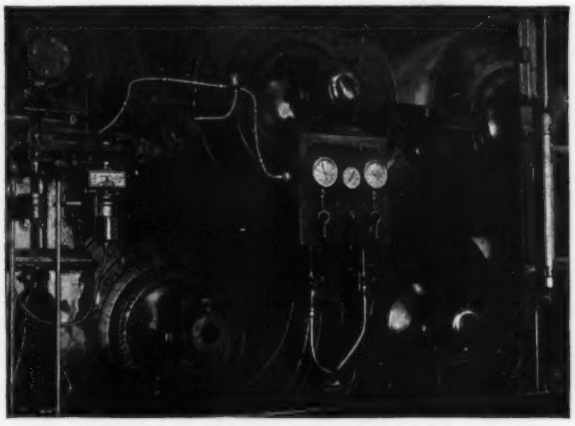
From this station, a daily check will be made with rangers and lookouts spotted in isolated locations between the border and the north end of Vancouver Island.

Much of the machinery and heavy gear for the depot was formerly in use at Thurston Bay, repair headquarters before the new project was completed. In the buildings are two marine ways, on one of which vessels up to 90 feet in length can be constructed or serviced.

James H. Blake, mechanical superintendent of the branch, supervised construction, and will be in charge of the station.

After the brief opening ceremony, Mr. Gray made a detailed inspection of the plant, lingering in the radio-telephone station where Operator J. E. Hay explained the workings of his complicated set.

The New Stickle Tension and Thermal Control
REMOVES THE HILLS AND VALLEYS FROM YOUR FLOW METER CHART



● **The New Stickle Tension and Thermal Control (illustrated in above installation) makes possible more uniform drying, improved quality of product and increased production efficiency.**

Moisture control within a variation of one-half of one per cent is guaranteed. Authenticated tests made on various installations have indicated actual control performance usually to be within closer limits, as, for example, tests on 4.8 Bleach Gray Linen Condenser Paper shows a variation not to exceed one-fourth of one per cent.

Mills now operating paper and board machines equipped with Stickle Drainage and Controls report savings of 400 to 1200 pounds of steam per ton of paper dried. A steam saving of around 20 per cent usually is obtained. This record of operating results, based on installations in a large number of mills, reflects a fairly accurate range of possibility for decreased steam costs, and between the two figures given doubtless lies the saving Stickle Equipment will obtain for you.

The stabilization of steam flow and close control of moisture eliminate cockling, reduces curling and shrinkage and to a very great degree prevents drier snap-offs. Very little manual attention is necessary.

This Stickle equipment is simple in construction. There is no delicate mechanism to get out of order. All moving parts are visible.

Modern Stickle Equipment and the results it achieves are a result of more than 35 years of specialization on paper making problems as they relate to drainage, steam flow, steam pressure and heating efficiency. All equipment is installed on a positive guarantee.

Without obligation to you, one of our field engineers will gladly check with you on your drying problems. Ask for Bulletins 60 and 60C.

STICKLE
STEAM SPECIALTIES COMPANY
2245 Valley Ave. INDIANAPOLIS, IND.

Obituary

Cleo J. Towle

Cleo J. Towle, aged 45 years, purchasing agent of the Missisquoi Corporation, Sheldon Springs, Vt., died suddenly July 7 while at work in his office.

Mr. Towle, a world war veteran and member of Green Mountain Post, No. 1, of St. Albans, apparently was in good health when he left his home for his office. He had been employed by the corporation since 1921.

He was born in West Burke, Vermont, February 8, 1896, the son of Jesse J. Towle and Minnie (Warren) Towle of St. Albans. He graduated from St. Albans high school and Worcester Tech. and after his discharge from the United States army following the world war, he entered the employ of the Missisquoi Corporation.

CLEO J. TOWLE

Mr. Towle was a member of Haswell Lodge, No. 39, F. &A.M. of Sheldon and also past master of that lodge. He was also a member of Carlisle Chapter, No. 8, OES of Sheldon, and BPOE, No. 1,566, of St. Albans and at the time of his death was chairman of the Sheldon school board.

Mr. Towle leaves his wife, Lillian (McKay) Towle; one son, Bertram M. Towle; two daughters, Barbara E. and Betty Anne Towle, all of this place; his parents, Mr. & Mrs. J. J. Towle of St. Albans and one sister, Mrs. J. P. Wood, of Syracuse, N. Y.

Robert C. Farrington

Robert C. Farrington, 59, chief mechanical engineer of the Austin Company, Cleveland, Ohio, engineers and builders, died at St. Joseph's Hospital, Fort Worth, Texas, Tuesday evening, July 15, following a heart attack suffered about two weeks ago. He had been associated with the company since 1918, when he joined the Austin organization as a mechanical engineer at the district office in Philadelphia

A native of Lafayette, N. Y., Mr. Farrington attended grade schools at Cardiff, N. Y. and the Onondaga Academy. He was graduated from Syracuse University as an electrical engineer in 1903 and for the next two years was employed as engineer and estimator with W. N. Tobin in New York City. From 1906 to 1913 Mr. Farrington was engaged in professional engineering work, first in New York as a partner of Sorenson & Farringtton, and subsequently in Syracuse under the name of Farrington & Berdsoll, In 1913 he became president and general manager of the York Engineering Company at York, Pa.

Mr. Farrington was in charge of all mechanical engineering work on the huge $60,000,000 automobile city built by Austin for the Soviet in 1930, and returned home to supervise the working out of control facilities for the world's first windowless factory, which Austin designed and built for Simonds Saw & Steel Company at Fitchburg, Mass., in 1931. He was probably more familiar with the requirements of controlled conditions factories than any other single individual.

Mr. Farrington was married to Mabel J. Barber of Mottville, N. Y., and they had two children, W. R. Farrington of Detroit and Mrs. Fred (Janet F.) Greve of Cleveland, and four grandchildren, all of whom survive.

Clifford K. Judd

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., July 21, 1941—Clifford Kellogg Judd, 62, president of the Judd Paper Company and a son of its founder, died today in the Boston hospital where he had gone 10 days previous for treatment.

Mr. Judd was a direct descendant of Thomas Judd who came to Cambridge from England in the early colonial period. His mother, Cleora Fowler Munson Judd, was a direct descendant of the English family of Munson. His father, John Kellogg Judd, founded the Judd Paper Company in 1883. Clifford entered the business as office boy, became a salesman for the firm and in 1929 was elected president when his father died. He was also president of the Sterling Paper Company.

He leaves his widow, one son, Richard M. Judd, an adopted daughter, Mrs. Guy Rothwell of Canton, one sister, Mrs. G. Harry Graves, Springfield, and a brother, Philip M. Judd of Holyoke.

Edward R. Carpenter

Edward R. Carpenter, owner of the Carpenter Paper Company, of Grand Rapids, Mich., for many years, died in his sleep early Thursday at his home in Chicago, where he had lived since 1930 when he sold the Carpenter Paper Company to become associated a few years later with the Swigart Paper Company of Chicago.

He continued it as the Carpenter Paper Company until 1930 when he sold out and for two years retired to California. In 1932 he went to Chicago and became manager of the Swigart Paper Company there, continuing with this firm until his death.

Mr. Carpenter was born Jan. 26, 1883, at Caro, Mich., and came first to Grand Rapids, Mich., in 1896 after the death of his father.

Mr. Carpenter was married in 1909 to Miss Maude Alcott of Grand Rapids, Mich. Besides his wife he is survived by his mother, Mrs. S. H. Guddall, of 222 Lafayette Ave., NE.

Deliveries Cause Worry

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., July 28, 1941—The local paper situation would be ideal if the delivery problem were not a constant source of worry to the trade. There is no lack of orders and credit conditions are good, but jobbers are finding it increasingly difficult to secure deliveries of the more popular items.

This applies to virtually all grades of paper and paper board. Government priorities coupled with curtailment from many supply sources due to the war, have created the shortages.

Demand for building paper continues good, though not as heavy as it was in June. Not only is there an increasing shortage of roofing and siding, but builders are finding shortages in other lines that have cut the volume of permits during the month. Dealers are finding their stocks badly out of balance and none have large stocks on hand.

Return of extremely hot weather the last week saw an increase in demand for summer specialties. Prices were strong and there is no likelihood of any downward revisions at the present time.

Tissues also were moving nicely with firm prices. Demand for waxed paper for the bakery and other trade users continued good and cellophane also was moving actively.

The fine paper market was strong with a good demand and jobbers reporting shortages in several items. The larger printers here report a large amount of work now in their shops and more in prospect for fall. Books, ledgers and covers all are in good demand.

Kraft is in demand, but stocks are low and deliveries apparently inadequate. Paper board demand also is heavy.

Buyers of containers are actively in the market and waxed containers for the dairy and ice cream trade particularly is in demand.

Local paper stock executives say the last week has seen a continued mill demand for paper stock with prices firm, but little inclination toward more strength than has been evident in the last fortnight. Rag demand is steady with prices firm and inclined to more strength.

FASTER PRODUCTION

It takes less time to prepare stock with the Appleton Vortex Beater. Quick loading, fast circulation, short distance of stock travel, powerful and rapid beating action and easy cleanout greatly reduce the time for each beating cycle, speed up production.

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It costs less to prepare stock with the Appleton Vortex Beater. Besides savings in time there are important power savings, and there are many installation, operating and maintenance advantages that help to cut beating costs. We will gladly give you detailed information.

THE APPLETON MACHINE COMPANY

APPLETON • WISCONSIN

War Dept. Lets Orders for Paper Cups

BOSTON, Mass., July 28, 1941.—The War Department has given contracts to the Burnitol Manufacturing Company for paper cups, $28,320, and to the Stone & Forsyth Company for paper cups, $27,450.

Directors Visit Powell River Co.

Directors of the Powell River Company recently spent three days in a personal tour of the plant of the company at Powell River, British Columbia. They took part in the social business and sports life of the community, officiating at the opening game of the Powell River Baseball League, visiting the plant, attending a game of the local box lacrosse team, and participating in foursomes on the golf course.

Amongst those who visited the plant were James Lawson of Vancouver, Paul A. Brooks and Mrs. Brooks, Minneapolis, George F. Laing, Vancouver, Robert H. Scanlon, Edward Brooks, Len Sample and Harold S. Foley.

PAPER
TRADE JOURNAL
Title Reg. U. S Pat. Off.
Henry J. Berger
EDITOR

Vol. 113 July 31, 1941 No. 5

COMING EVENTS IN PAPER INDUSTRY

New England Section. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

Delaware Valley Section. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

Lake States Section. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

Kalamazoo Valley Section. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

Technical Association of the Pulp and Paper Industry, Fall Meeting, Ann Arbor, Mich., September 16-19.

National Paper Trade Association, annual Fall Meeting, Stevens Hotel, Chicago, Ill. September 15-17.

THE NEW TAX BILL

Formally reporting on July 26 the new defense tax bill, some members of the Ways and Means Committee declared there is no such thing as a "good tax bill". That opinion seems to describe the latest taxation plan more or less accurately. The new measure raises taxes $3,529,000,000 and is calculated to meet 60% of Federal expenditures. Federal revenue from the normal and excess profits of corporations amounts to $1,322,900,000; individuals, $1,152,000,000 and miscellaneous excise taxes, $1,054,300,000.

In reporting the new levies the committee stated that, "The bill is unprecedented in the amount of revenue it is designed to provide. It lays a substantially increased burden on the American people. But there is convincing evidence that this burden will be borne cheerfully in the light of the overwhelming importance of national defense to the continued freedom of the United States. It is believed that the risk to life and property from an inadequate preparedness would make even a much heavier burden attractive by comparison. Due consideration was given to the economic and social effects of the proposed levies. There was continually in mind the need for keeping to a minimum, consistent with our defense efforts, any disruption of our economy, and at the same time supplying a needed restraint upon inflationary tendencies."

In a clear analysis of the new tax measure, Godfrey N. Nelson, lawyer and tax authority, in *The New York Times*, states that, "Viewing broadly the tax bill about to be introduced by the House Ways and Means Committee, one cannot refrain from making certain comparisons between its main provisions with those of the World War tax measures. By comparison, there is evident in the proposed bill an underlying intent to deal fairly, though not leniently, with business enterprise and to impose upon individual taxpayers a burden much heavier than any heretofore placed upon them."

Pointing out that experience has been applied in writing the new tax measure, Mr. Nelson says in part that, "Experience with the World War profits taxes proved that in a vast number of cases the statutory invested capital was not determinable. To overcome this defect in the law it was found necessary to adopt relief measures by provision, of which corporations whose invested capital was not ascertainable become entitled to be assessed at the rates assessed against concerns engaged in a like industry and having statutory invested capital. A corporation dissatisfied with a special assessment, however, was denied recourse to the courts, and may cases of hardship resulted from the denial, or inadequacy of credit, or special assessments. No such relief provision is contained in the present excess profits tax law. In its place, however, is a credit of 95% of the corporation's earnings of the base period years, 1936 to 1939, inclusive, and in principle this provision is retained in the committee's bill. Thus corporations with base period experience will be required to pay the profits tax only upon earnings in excess of such credit."

In presenting to the House its report, the Ways and Means Committee stated that the date of the bill will apply to corporate and individual income taxpayers as of January 1, 1941. Corporations and individuals will thus be required to pay on incomes received in the current year. The excise taxes become payable on enactment of the bill, with such concerns as have purchased goods under an installment contract prior to July 1, 1941, exempted from a floor stock tax on goods so purchased. The normal individual surtax rate of 4% is unchanged, but the 10% defense tax was made permanent.

In a study made by the Division of Industrial Economics of the National Industrial Conference Board, it was stated that the inequalities caused by normal business fluctuations were "aggravated" by the present tax system. Statistics on fifteen major industries during the period from 1922 to 1937 showed that the lumber and wood products industry paid 47.4% of their net income less deficit in Federal income taxes, were those subject to comparatively small fluctuations in annual earnings, the report said. On the other hand, industries, such as the service group, engaged in rendering professional services, incurred deficits in excess of net income every year from 1931 through 1936. "The discriminatory consequences of taxes on these groups are rather mild, however, in comparison with those on sixty-nine subgroups for which figures are available for the eleven years from 1927 through 1937. Sixteen of these sixty-nine industries paid Federal income taxes in excess of their

net income less deficits. Eleven of the sixteen incurred deficits in excess of net income. The taxes paid by the other five ranged from 166% of net income less deficit to 20.8%. The figures compiled by the Bureau of Internal Revenue leave to the imagination the discrimination which the Federal income tax law has unwittingly imposed on individual corporations."

Practice for Salt Packages

Printed copies of Simplified Practice Recommendation R70-41, Salt Packages, are now available, according to an announcement of the National Bureau of Standards, Department of Commerce.

This recommendation, which originally became effective in 1927, established a simplified list of 20 package sizes for the various kinds of salt. Prior to that time there were 35 package capacities in use. The current revision, despite the addition of certain packages of recent origin, further reduces the recommended list of package capacities to 12.

This revision also includes the packaging practice of the Pacific coast, not heretofore given, and contains a brief description of the various kinds of salt to which the packaging recommendations apply. Capacities and kinds of shipping containers, as well as primary containers, are also listed.

Copies of R70-41 may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 5 cents each. A discount of 25 per cent on orders for 100 or more copies is available to those desiring to obtain a supply of this publication for business purposes.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks, 1941		Corresponding Weeks, 1940	
June 14	99.4	June 15	91.9
June 21	99.7	June 22	93.1
June 28	101.3	June 29	92.0
July 5 (Holiday Week)	75.0	July 6	69.0
July 12	95.8	July 13	91.1
July 19 (Prelim.)	*100.4*	July 20	91.3

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1940	89.1	84.7	82.3	84.3	90.0	92.1	85.3
1941	85.6	89.4	92.3	96.4	89.9	*99.6*	...

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1940	85.1	81.5	85.5	84.9	80.9	85.6
1941	...	...	...	...	...	...

COMPARATIVE YEARLY SUMMARIES

	1935	1936	1937	1938	1939	1940	1941
Year to Date	68.2	77.7	87.9	67.6	78.6	86.9	*93.2*
Year Average	69.9	80.4	79.8	71.5	83.4	85.6	...

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS †

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1936	62	67	67	70	69	70	69	75	78	82	80	74	72
1937	80	86	86	88	85	77	66	74	69	65	55	45	73
1938	54	60	61	57	58	56	57	66	66	70	65	59	61
1939	60	67	71	69	64	67	63	72	74	84	81	71	70
1940	71	70	69	70	76	79	72	74	72	79	77	71	73
1941	75	81	82	83	*84*	*88*	..	..	..	..	..	..	..

Week ending June 14, 1941—88
Week ending June 21, 1941—88
Week ending June 28, 1941—90
Week ending July 5, 1941—74
Week ending July 12, 1941—77
Week ending July 19, 1941—92

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

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OF AMERICAN PULP

TO
BRITAIN
SOUTH AMERICA
AND ALL WORLD MARKETS

LYDDON
& COMPANY
(AMERICA) INC.

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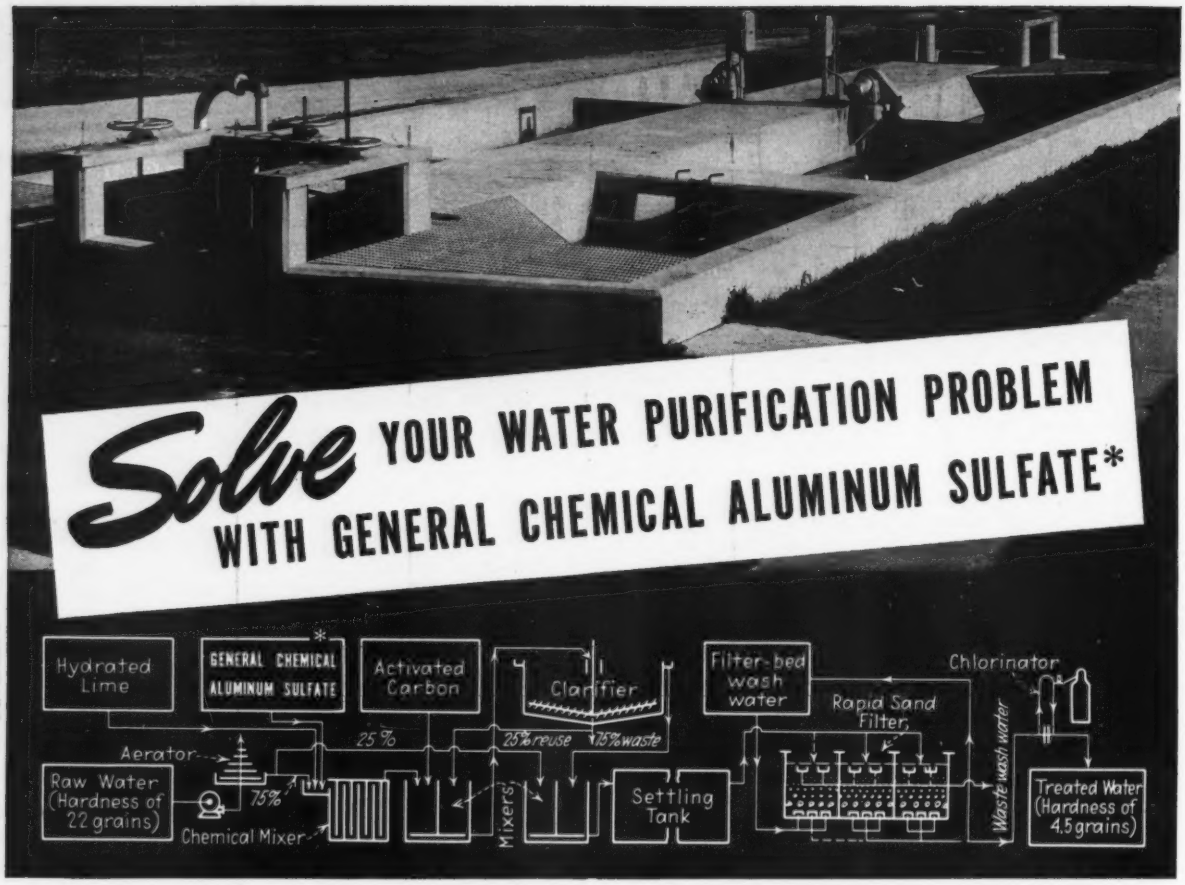

• At this time of the year paper manufacturers are faced with the problem of securing enough sufficiently pure water for their mills.

Today many of them are solving the problem efficiently and economically through the use of General Chemical Aluminum Sulfate.

General Chemical Aluminum Sulfate removes turbidity, organic and inorganic material and at the same time will "floc out" other suspended materials. Let General Chemical Company help solve your water purification problem now.

SPECIFIC ADVANTAGES OF COAGULATION WITH GENERAL CHEMICAL ALUMINUM SULFATE

1. It is simple to apply, clean, easy to handle.
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3. It is a year-round coagulant.
4. No other chemical is needed to complete the reaction. There is no need for exact proportioning of two or more chemicals.

General Chemical Technical Service Division

This Division is manned by a staff of technically trained men thoroughly conversant with the use of papermaking chemicals and chemicals for water purification in paper mills. Inquiries for information are given prompt attention—and where advisable, a representative will be assigned to work on the problem with the customer in his own plant.

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Sales Offices: Atlanta • Baltimore • Boston • Bridgeport (Conn.) • Buffalo • Charlotte (N. C.) • Chicago Cleveland • Denver • Detroit • Houston • Kansas City • Milwaukee • Minneapolis • Newark (N. J.) New York • Philadelphia • Pittsburgh • Providence (R. I.) • St. Louis • Utica (N. Y.)

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In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver

Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

United States Patents on Papermaking

Second Quarter, 1941

Compiled by Clarence J. West, Chairman, Committee on Abstracts and Bibliography, TAPPI

The following list of patents has been compiled from the current numbers of the Official Gazette of the United States Patent Office. Because, as a rule, only one claim is published in the Gazette, it is not claimed that the list is complete; it is also possible that some patents have been included which do not apply to papermaking.

Copies of any of the following patents may be obtained from the U. S. Patent Office, Washington, D. C., by sending ten cents for each patent desired. The number, name of inventor and title of patent should be given in the request. Personal checks or postage stamps are not accepted. Book of coupons may be purchased for two or ten dollars, good for 20 or 100 patents. Coupon orders do not have to be accompanied by letters of transmittal.

April 1, 1941

2,236,526. Nonfibrous structure and method for preparing same. Donald Ellsworth Drew, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed Aug. 30, 1938. 13 claims. (Cl. 91-68). A process of preparing uniformly sized dry regenerated cellulose web.

2,236,527. Adhesive sheet and method of making. Richard Gurley Drew, assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn. Filed Dec. 23, 1938. 14 claims. (Cl. 91-68). The porous paper backing is impregnated with rubber, resin and a reinforcing pigment.

2,236,533. Cellulose ethers. Frederick C. Hahn, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed Dec. 21, 1937. 11 claims. (Cl. 260-231). A method of preparing an alkali cellulose.

2,236,546. Heat sealable moistureproofing composition. James A. Mitchell, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed June 1, 1939. 28 claims. (Cl. 91-68). A regenerated cellulose film coated with nitrocellulose, wax, plasticizer and a synthetic terpinene-maleic anhydride polybasic acid resin complex.

2,236,567. Adhesive sheeting. Richard Gurley Drew, assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn. Filed Feb. 18, 1938. 8 claims. (Cl. 91-68).

2,236,597. Rubber base sheeted abrasive. Lloyd A. Hatch, assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn. Filed Sept. 28, 1933. 7 claims. (Cl. 51-298). The backing and abrasive are united by a mixture of rubber, a rubber isomer and a synthetic resin.

2,236,602. Ink for carbon paper. Samuel A. Neidich, assignor to Underwood Elliott Fisher Company, New York, N. Y. Filed June 29, 1937. 3 claims. (Cl. 260-736). A transfer material adapted for use in the manufacture of carbon paper.

2,236,664. Carton and method of manufacture. Lawrence E. Arneson, assignor to Morris Paper Mills, Chicago, Ill. Filed Aug. 24, 1938. 2 claims. (Cl. 93-49). Method of forming a container having attached bottom and top sections.

2,236,685. Heat sealing device. Harold E. Hallman, Catonsville, Md. Filed Aug. 27. 1938. 6 claims. (Cl. 93-8). An apparatus for inducing adhesive penetration in bag bottoms formed from wax coated paper.

2,236,718. Decorative article and coating for producing the same. Alfred B. Poschel, assignor to The Meyercord Company, Chicago, Ill. Filed July 10, 1939. 4 claims. (Cl. 41-33). A coating for decalcomania consists of a cellulose derivative and solvents, diatomaceous earth, magnesia and diethyl phthalate.

2,236,835. Box forming machine. Walter E. Pope, Port Dickinson, N. Y. Filed Aug. 21, 1939. 8 claims. (Cl. 93-36.4).

2,236,847. Coated paper. Frederick H. Frost, assignor to S. D. Warren Company, Boston, Mass. Filed May 23, 1938. 2 claims. (Cl. 91-68). Paper is coated on one side with a titanium dioxide and calcium carbonate, clay or satin white with casein coating color, supercalendered and then coated with a transparent lacquer.

2,236,900. Reconstituted felt and manufacture of same. Harold W. Greider and Marion F. Smith, assignors to The Philip Carey Manufacturing Company, Cincinnati, Ohio. Filed Sept. 6, 1935. 8 claims. (Cl. 92-21). Thermoplastic substance treated fabrics containing granular mineral material is disintegrated in water and formed into a sheet.

2,236,932. Apparatus for continuously manufacturing corrugated construction boards. Gerrit Jan Arentsen, Diemerbrug, Netherlands. Filed Jan. 27, 1939. 6 claims. (Cl. 154-30).

2,236,969. Paper shredder. Einar I. Flateboe, Everett, Wash. Filed Sept. 6, 1938. 4 claims. (Cl. 83-6).

2,237,068. Method for making coated paper. Donald B. Bradner, assignor to The Champion Paper and Fibre Company, Hamilton, Ohio. Filed Aug. 27, 1938. 4 claims. (Cl. 92-40). A method of forming a filter cake of coating color on the web and wiping off the excess with rubber doctor blades.

2,237,084. Blueprint coating. Robert Bowling Barnes and Leonard Patrick Moore, assignors to American Cyanamid Company, New York, N. Y. Filed Aug. 28, 1940. 3 claims. (Cl. 95-7). A mixture of guanidine oxalate and ferric oxalate is treated with a soluble ferricyanide.

2,237,115. Drier felt. John R. L. Santos, assignor to William E. Hooper & Sons Company, Baltimore, Md. Filed May 16, 1939. 3 claims. (Cl. 139-415). A method of weaving a drier felt.

2,237,235. Process for making leather sheets. Thornton L. Lynam, New Bedford, Mass. Filed Nov. 11, 1936. 6 claims. (Cl. 92-21). A mixture of short and long fibers from tanned scrap leather is adjusted to a pH of 4.5-5.5 and run on a papermaking machine.

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Reissue 21,762. Adhesive sheeting. Richard Gurley Drew, assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn. Original No. 1,856,986, dated May 3, 1932. Application for reissue May 3, 1934. 15 claims. (Cl. 154-50).

2,237,295. Fiber and process of extracting the same. Edwin Horace Akin, Austin, Texas. Filed July 29, 1938. 9 claims. (Cl. 92-7). The cactus plant is treated with steam to loosen the pulp from the fibrous structure and the pulp is removed mechanically or by the action of formic acid.

2,237,327. Method of and apparatus for making bags. Raymond M. Bell, assignor to Benjamin C. Betner Company, Devon, Pa. Filed March 7, 1940. 4 claims. (Cl. 93-35).

2,237,337. Method of making fibrous product. Simon Collier, Fred T. Randolph and William G. Collins, assignor to Johns-Manville Corporation, New York, N. Y. Filed Nov. 28, 1936. 3 claims. (Cl. 92-21). Preparation of asbestos sheet containing sodium silicate and lime.

2,237,374. Paper filler. Allen K. Smith, assignor to The Institute of Paper Chemistry, Appleton, Wis. Filed July 11, 1936. 10 claims. (Cl. 134-58). A filler having high opacity and brightness is formed by mixing aqueous silicate with an aqueous solution of a soluble salt (zinc chloride), neutralized with acid and the precipitate is washed and dried.

2,237,472. Paper folding machine. Frederick Brillas, New York, N. Y. Filed Oct. 5, 1939. 7 claims. (Cl. 270-68).

2,237,568. Method of integrating paper tissue on paper or other porous materials. Colin Landin, Washington, D. C. Filed Dec. 22, 1938. 1 claim. (Cl. 154-2). Tissue paper is coated with a gelatinous solution, dried under bi-directional restraint, place upon a porous surface and the tissue is wetted from above.

2,237,623. Laminated sheet and stamped metal panel. Joseph Ledwinka, assignor to Edward G. Budd Manufacturing Company, Philadelphia, Pa. Filed Jan. 31, 1935. 1 claim. (Cl. 154-45.9).

2,237,635. Pulp dehydrator. Walter E. Saxe, assignor to The Conveyor Company, Los Angeles, Calif. Filed July 15, 1939. 14 claims. (Cl. 34-12).

2,237,641. Controlling means for adhesive applying apparatus. George W. von Hofe, assignor to New Jersey Machine Corporation, Hoboken, N. J. Filed June 26, 1940. 7 claims. (Cl. 91-50).

2,237,755. Manufacture of zinc sulphide pigment. Zoltan de Horvath and William B. Paris, assignors to The Eagle-Picher Lead Company, Cincinnati, Ohio. Filed Aug. 15, 1936. 6 claims. (Cl. 134-78).

2,237,759. Paper winding machine. George M. Kwitek, assignor of one-half to Edwin M. Kwitek and one-fourth to Ruben J. Pech, Green Bay, Wis. Filed Jan. 25, 1940. 16 claims. (Cl. 164-68).

2,237,828. Method of an apparatus for forming fiber can bodies. Alexander G. Hatch and Robert S. Condon, assignors to Fibre Can Development Corporation, Rutland, Vt. Filed Sept. 30, 1937. 47 claims. (Cl. 93-81).

2,237,877. Method and apparatus for feeding paper. James B. Fulk, Norwalk, Ohio. Filed May 5, 1939. 14 claims. (Cl. 101-232). Method of feeding a continuous strip into a rotary rewind press.

2,237,917. Application of sections of material to running webs. Jack Shackleton, assignor to American Machine & Foundry Company, New York, N. Y. Filed Sept. 16, 1937. 3 claims. (Cl. 154-36). Method of applying gold tipping to cigarette wrapper web.

2,238,007. Chemical recovery furnace and method of chemical recovery. John Phillips Badenhausen, assignor of one-half to Day and Zimmermann, Incorporated, Philadelphia, Pa. Filed March 22, 1938. 8 claims. (Cl. 23-48).

2,238,013. Coating process. William R. Collings and Harry W. Bull, assignors to The Dow Chemical Company, Midland, Mich. Filed July 24, 1939. 4 claims. (Cl. 91-68). A method for applying beadless coating to any moving flexible support; the coating employed includes cellulose derivatives or polyvinyl resins.

2,238,017. Method and apparatus for manufacturing wallboard. James K. Duncan, assignor to United States Gypsum Company, Chicago, Ill. Filed Oct. 23, 1937. 13 claims. (Cl. 154-2). Method of forming recessed-end plasterboards.

2,238,021. Ammoniated tall oil product and method of producing the same. David W. Jayne, Jr., assignor to American Cyanamid Company, New York, N. Y. Filed Aug. 23, 1938. 11 claims. (Cl. 260-97.5). A substantially anhydrous solution of the ammonium salts of tall oil acids in a paraffin alcohol of one to five carbon atoms.

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2,238,109. Emulsifiable wax product. William K. Griesinger, assignor to The Atlantic Refining Company, Philadelphia, Pa. Filed Dec. 10, 1938. 4 claims. (Cl. 134-22). Paraffin wax is

emulsified with 3-12% of oil-soluble, water-dispersible soap of a petroleum sulphonic acid.

2,238,157. Mechanism for producing perforated webs. Wesley S. Corbin, assignor to Scott Paper Company, Chester, Pa. Filed April 4, 1940. 4 claims. (Cl. 164-99).

2,238,256. Method of making containers. William Engel and Harry A. Reinhardt, assignors to Universal-Engel Paper Box Co., Inc., St. Louis, Mo. Filed Jan. 12, 1938. 6 claims. (Cl. 93-39). Method of forming a heart-shaped box.

2,238,301. Blueprint coating. Robert Bowling Barnes, Garnet Philip Ham, and Leonard Patrick Moore, assignors to American Cyanamid Company, New York, N. Y. Filed April 10, 1940. 6 Claims. (Cl. 95-7). A light sensitive ferric salt and diammonium sodium ferricyanide are used.

2,238,339. Process of making soluble starch. Walter A. Nivling, Newton, Mass. Filed Aug. 22, 1938. 6 claims. (Cl. 127-33). The starch is partly converted by chemical action in the presence of water, the product is filtered, partly dried and sprayed with an oxidizing chemical to convert the starch into a soluble form.

2,238,388. Mechanism for closing carton ends. Carl Wilhelm Hartmann, assignor to Satona Limited, Edinburgh, Scotland. Filed April 27, 1940. 5 claims. (Cl. 93-36.8).

2,238,695. Apparatus for applying adhesive to wax coated paper. Harold E. Hallman, Catonsville, Md. Filed Aug. 27, 1938. 8 claims. (Cl. 91-50).

2,238,767. Adhesive composition. Hans F. Bauer, Jordan V. Bauer, and Don M. Hawley, assignors to Stein, Hall Manufacturing Company, Chicago, Ill. Filed Jan. 14, 1939. 13 claims. (Cl. 134-23.4). A remoistening adhesive consisting mainly of a starch-conversion product converted to a solubility of less than 50 per cent and a dextrin content of 10-20 per cent, containing 5-25 per cent of urea.

2,238,853. Method of making pulp molding dies. Ernest L. Shepard, assignor to The Canal National Bank of Portland, Portland, Maine. Filed March 9, 1939. 3 claims. (Cl. 76-107).

April 22, 1941.

2,238,956. Vinyl resin emulsion. Corneille O. Strother, assignor to Carbide and Carbon Chemicals Corporation, New York, N. Y. Filed June 7, 1938. 12 claims. (Cl. 260-32). A thixotropic solution of a vinyl resin is proposed as a coating composition.

2,239,107. Composite board. Victor Lefebure, assignor to Imperial Chemical Industries Limited, London, England. Filed Dec. 7, 1937. 12 claims. (Cl. 154-45.9). A plaster composite has at least one layer of fibrous material which enables it to be transported but is capable of being separated to expose the surface of the mineral core.

2,239,245. Leather substitute. Leo E. Oliner, New York, N. Y. Filed April 5, 1939. 2 claims. (Cl. 154-46).

2,239,263. Examination of transparent solid materials. Allan Coley Waie and Fazul Din, assignors to The Triplex Safety Glass Company Limited, London, England. Filed Jan. 10, 1939. 13 claims. (Cl. 88-14). A method of examining a sheet of transparent material for homogeneity throughout its thickness.

2,239,358. Manufacture of adhesives for the machine fabrication of laminated paper products. James G. Vail and Chester Leon Baker, assignors to Philadelphia Quartz Company, Philadelphia, Pa. Filed March 16, 1938. 15 claims. (Cl. 134-23.92). A quick-setting adhesive for high-speed operations consists of a substantially stable suspension of a highly dispersed clay in a solution of an alkali metal silicate.

2,239,409. Brush supporting and vibrating mechanism for web-coating machines. Morgan L. Woodruff, Lynn B. Case, and John Kupka, assignors to John Waldron Corporation, New Brunswick, N. J. Filed June 21, 1939. 18 claims. (Cl. 91-37).

2,239,472. Paper winding regulator. William T. Stanford, assignor to Vac-Control Manufacturing Company, Oklahoma City, Okla. Filed May 8, 1939. 6 claims. (Cl. 242-76).

2,239,606. Method of bleaching kraft pulp. Edward H. Hill and Ralph Hooks, assignors to West Virginia Pulp and Paper Company, New York, N. Y. Filed Aug. 25, 1938. 8 claims. (Cl. 8-105). Bleaching with chlorine and then with hypochlorite at a pH of 3.5-7, with alkali washing after each step.

2,239,607. Apparatus for wet-treating strip material. James J. Himsworth, assignor to Continental-Diamond Fibre Company, Newark, Del. Filed Oct. 4, 1940. 17 claims. (Cl. 68-158).

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2,239,814. Paper-sizing composition. Earle R. Edson and Charles Quincy Ives, assignors to Le Page's Inc., Gloucester, Mass. Filed March 13, 1939. 12 claims. (Cl. 134-21). Dry rosin size particles enveloped by dry, acidic, calcined starch-conversion product having a dextrin content downwards of about 60 per cent and substantial solubility in water at 70 deg. F.

2,239,828. Coated abrasive. Nicholas E. Oglesby, assignor to Behr-Manning Corporation, Troy, N. Y. Filed Feb. 6, 1937. 3 claims. (Cl. 51-293). Manufacture of sandpaper.

2,239,860. Method of making plastic products. Carlisle K. Roos, assignor to United States Gypsum Company, Chicago, Ill. Filed April 28, 1937. 9 claims. (Cl. 154-2). A hard, dense, and strong gypsum wallboard.

2,239,861. Method of making plastic products. Carlisle K. Roos, Delbert F. Jurgensen, Jr., and Thomas P. Camp, assignors to United States Gypsum Company, Chicago, Ill. Filed April 28, 1937. 4 claims. (Cl. 154-2). A process of making a hard, dense, and strong set gypsum wallboard.

2,239,874. Cutoff mechanism for bag machines. Walter Bochow, assignor to Equitable Paper Bag Co. Inc., Long Island City, N. Y. Filed May 23, 1940. 7 claims. (Cl. 93-33).

2,239,945. Feeding and folding mechanism for wrapping machines. Howard B. Tuthill and Harry F. Caldwell, assignors to Oliver Machinery Company, Grand Rapids, Mich. Filed April 26, 1939. 15 claims. (Cl. 93-1).

2,240,017. Process for producing white mechanical wood pulp from pine wood. Otto Primavesi, Berlin-Tempelhof, Germany. Filed March 22, 1938. 3 claims. (Cl. 92-6). Pine wood is ground in the presence of an aqueous solution of a calcium salt in amount sufficient to form a calcium soap with the resin acids of the wood and adding a soluble alkali metal phosphate, converting the calcium soap into calcium phosphate which is an inert, filler-like material which is unobjectionable in the papermaking process.

2,240,031. Transfer process and copy paper for use therein. Robert C. Bour, assignor to Ditto, Incorporated, Chicago, Ill. Filed March 6, 1939. 4 claims. (Cl. 101-149.5). The paper contains a water-soluble wetting agent distributed on the contact surface.

2,240,072. Translucent laminated article. Paul E. Hodgdon, Heartwellville, Readsboro, Vt., and Edward C. LaBelle, Monroe Bridge, Mass. Filed May 3, 1939. 2 claims. (Cl. 154-50). A translucent laminated article bearing a translucent design consists of two sheets of glassine enclosing a film of wax containing titanium dioxide; the film of wax carries the design.

2,240,165. Apparatus for shaping flat cups. Sidney M. Scott, assignor to Boston Envelope Company, Dedham, Mass. Filed April 18, 1940. 7 claims. (Cl. 93-36.05).

2,240,315. Apparatus and process for drying waxed paper. Cecil M. Rhodes and Lyle L. McGladrey, assignors to Rapinwax Paper Company, Minneapolis, Minn. Filed Sept. 24, 1938. 5 claims. (Cl. 34-9). A sheet of moist wax paper is passed between soft surfaced rollers; the rollers are scraped and treated with a bath of cleaning fluid.

2,240,342. Manufacture of chlorine compounds. Irving E. Muskat and George H. Cady, assignors to Pittsburgh Plate Glass Company, Allegheny County, Pa. Filed Sept. 30, 1937. 2 claims. (Cl. 23-152). Chlorine is partially converted to chlorine monoxide and the latter is reacted with water.

2,240,343. Material treatment. Irving E. Muskat, assignor to Pittsburgh Plate Glass Company, Allegheny County, Pa. Filed Nov. 26, 1937. 17 claims. (Cl. 134-58). Method of producing titanium dioxide.

2,240,344. Preparation of hypochlorous acid. Irving E. Muskat and George H. Cady, assignor to Pittsburgh Plate Glass Company, Allegheny County, Pa. Filed July 23, 1938. 16 claims. (Cl. 23-152). Chlorine is partially converted into chlorine monoxide and the latter is reacted with water.

2,240,365. Method of treating tall oil. Emil Edward Dreger, assignor to Colgate-Palmolive-Peet Company, Jersey City, N. J. Filed July 11, 1939. 11 claims. (Cl. 260-97.5). The tall oil is neutralized with alkali and heated above the melting point of the anhydrous soap in an inert gas, giving volatile, non-saponified materials.

2,240,376. Method and apparatus for evaporating sulphate residual liquor. Börje Sune Nyquist, assignor to Aktiebolaget Svenska Flaktfabriken, Stockholm, Sweden. Filed March 17, 1939. 2 claims. (Cl. 159-10). An apparatus for evaporating black liquor with hot flue gas.

2,240,403. Process for treatment of so-called white water. Adolf Magnus Rupert Karlström, Gothenburg, Sweden. Filed Jan. 27, 1938. 1 claim. (Cl. 210-2). An aluminum compound is added to the white water having a pH value of 4-6 and sufficient sulphonated oil to focculate the solid particles.

2,240,445. Box forming machine. James Boyd Thaxton, assignor to Paper Package Company, Indianapolis, Ind. Filed April 10, 1939. 13 claims. (Cl. 93-39).

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2,240,501. Cup machine. Harold Greenhill, assignor to Dixie-Vortex Company, Chicago, Ill. Filed April 5, 1937. 8 claims. (Cl. 93-36.2).

2,240,722. Color analyzer. Harold A. Snow, Mountain Lakes, N. J. Filed April 4, 1938. 24 claims. (Cl. 88-14). Spectrophotometric means for making analyses of two or more color specimens.

2,240,869. Wire faced roll for papermaking machines. Harry G. Specht, assignor to Encor Corporation, Belleville, N. J. Filed April 17, 1939. 10 claims. (Cl. 92-43). A cylinder roll.

2,241,174. Sizing composition. Calvin L. Bachelder, assignor to Hercules Powder Company, Wilmington, Del. Filed Feb. 3, 1940. 6 claims. (Cl. 134-21). A mixture of emulsified wax and rosin size, a protein (from 1/5 to 1/33 of the combined weight of the wax and rosin size) and starch (1-6 per cent by weight of the entire composition).

2,241,306. Process for obtaining a tanning agent from waste sulphite liquor. Max Hönig, assignor of 30 per cent to Wilhelm Feith, Brunn, Czechoslovakia. Filed Feb. 23, 1939. 2 claims. (Cl. 260-124). Sulphite waste liquor, adjusted to pH 9 by lime, is heated until a pressure of 15 atmospheres is set up and maintained at this pressure for 1.5 hours with continuous stirring, the free lime is neutralized and the liquor filtered.

2,241,307. Tension regulator for paper feed rolls. Conrad J. Kern, assignor to The Moore & White Co., Philadelphia, Pa. Filed April 28, 1939. 5 claims. (Cl. 242-75). Means for controlling the tension of paper drawn from a rotating roll.

2,241,312. Manufacture of laminated fibrous articles. Willy Lüty, assignor to Th. Goldschmidt Corporation, New York, N. Y. Filed Jan. 14, 1939. 7 claims. (Cl. 154-2).

2,241,329. Paper folding machine. Glenn A. Shaffer, assignor to Fort Howard Paper Company, Green Bay, Wis. Filed Feb. 7, 1939. 23 claims. (Cl. 270.66). A paper folding and interfolding machine.

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2,241,395. Slitting machine. George H. Egling, assignor to American Can Company, New York, N. Y. Filed Dec. 6, 1938. 8 claims. (Cl. 164-61). A machine for slitting or cutting sheet material.

2,241,410. Scenery paper. Conrad B. Maurer, assignor to Maurer Paint Company, Philadelphia, Pa. Filed May 2, 1940. 6 claims. (Cl. 41-34). A decorative paper which can be crumpled without cracking but stiff enough to retain a fashioned position.

2,241,500. Method of making fiber panel board. Clements Batcheller, Glens Falls, N. Y. Filed Sept. 30, 1936. 9 claims. (Cl. 154-2). A non-brittle, non-warping cement-fiber sheet.

2,241,554. Apparatus for manufacturing paper. Frank J. Lang and Frank Adlai Walker, said Lang assignor to International Paper Company, New York, N. Y. Filed Dec. 23, 1937. 1 claim. (Cl. 91-48). A device for correcting localized deficiencies of liquid content occurring across the width of a moving web.

2,241,627. Process for making a metal lignin sulphonate. Howard B. Birt, William C. Pritchard and Robert A. Daily, assignors to General Motors Corporation, Detroit, Mich. Filed Sept. 2, 1938. 4 claims. (Cl. 260-184). Hardwood is boiled with dilute sulphuric acid and the residue is sulphonated, thereby forming a soluble, substantially pure lignosulphonic acid.

2,241,668. Seam for woven wire fabric. Francis D. Martin, assignor to The Lindsay Wire Weaving Company, Cleveland, Ohio. Filed June 19, 1940. 5 claims. (Cl. 245-10).

2,241,678. Method and machine for making folding boxes. Melvin H. Sidebotham, Newton, Mass., assignor of one-half to Harlow M. Russell, Chelsea, Mass. Filed Feb. 13, 1939. 11 claims. (Cl. 93-49).

2,241,688. Breast box for paper machines. Frank H. Williams assignor to Crane & Co., Inc., Dalton, Mass. Filed June 12, 1940. 14 claims. (Cl. 92-44).

2,241,700. Adhesive. Paul B. Davidson and Julius R. Adams, assignors to Old Colony Envelope Company, Inc., Westfield, Mass. Filed Apr. 19, 1938. 3 claims. (Cl. 134-23.4). A partially dextrinized starch dispersed in a solution of a volatile acid and a fluidifying agent (a urea); the total reducing sugar content is about 2 per cent.

2,241,711. Container sealing machine. Roy E. Lowey, assignor to Container Corporation of America, Chicago, Ill. Filed May 8, 1939. 5 claims. (Cl. 93-39).

2,241,819. Composition roofing material. Lester Kirschbraun and Richard E. Cubberley, assignors to The Patent and Licensing Corporation, New York, N. Y. Filed Nov. 9, 1939. 16 claims. (Cl. 108-7). An asphalt shingle.

2,242,087. Papermaking pulp mixture and method of producing the same. Joseph E. Plumstead, assignor to West Virginia Pulp & Paper Company, New York, N. Y. Filed July 11, 1933. 8 claims. (Cl. 92-21). The mixture consists of pulp fibers and about 15 per cent each of calcium carbonate and calcium sulphite.

2,242,177. Carton sealer. John L. Ferguson, assignor to J. L. Ferguson Company, Joliet, Ill. Filed March 11, 1939. 37 claims. (Cl. 93-6).

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2,242,228. Method of making calcium carbonate. Donald B. Bradner, assignor to The Champion Paper and Fibre Company, Hamilton, Ohio. Filed Feb. 9, 1939. 9 claims. (Cl. 23-66). Carbon dicxide is passed into an aqueous suspension of hydrated lime in the presence of a salt such as aluminum chloride, ammonium chloride, calcium sulphate, sodium sulphate, or barium hydroxide.

2,242,313. Heat-resisting stencil film. John S. Marran, assignor to L. C. Smith & Corona Typewriters, Inc., Syracuse, N. Y. Filed March 7, 1940. 6 claims. (Cl. 41-46). A cellophane base is coated with mineral black, a nondrying oil, a vegetable wax and aluminum powder.

2,242,320. Chalk resistant titanium dioxide pigment. George Francis, assignor to Titan Company, Inc., Wilmington, Del. Filed Dec. 27, 1938. 9 claims. (Cl. 134-39) The titanium dioxide contains 0.2-5 per cent of chromium naphthenate.

2,242,419. Method and apparatus for controlling the consistency of paper pulp. Edwin Cowles, assignor to The Cowles Company, Princeton, N. J. Filed April 2, 1937. 5 claims. (Cl. 137-78). The amount of water to be added is determined by the amount of work required to agitate the thickened stock.

2,242,601. Coating composition. Frederick J. Wallace, assignor to Robeson Process Company, New York, N. Y. Filed Nov. 2, 1938. 1 claim. (Cl. 134-79). Five parts of lignin from black liquor and 5 parts of cellulose nitrate in a solvent consisting of anyl acetate, methyl alcohol and turpentine comprise a coating composition useful as a varnish and lacquer.

2,242,778. Moisture controller. Hervey G. Cram, assignor to P. D. Cram, Appleton, Wis. Filed Aug. 15, 1938. 5 claims. (Cl. 34-48). A method for controlling the steam supply to the drying section of a paper machine.

2,242,799. Heat sealing envelope machine. Edmund B. Moore, Brooklyn, N. Y. Filed Sept. 24, 1936. 7 claims. (Cl. 93-61).

2,243,050. Process of producing spinnable fibers and cellulose from plants. Hendricus Plant, assignor to N. V. Expolitatie Naatschappij voor Chemische Uitvindingen (E. C. U.), Wassenaar, Netherlands. Filed June 27, 1938. 8 claims. (Cl. 92-13). Material is subjected to the simultaneous action at atmospheric pressure of aqueous alkali metal lye and a mixture of air and steam.

2,243,051. Box making machine. Frank Rodgers Neely, assignor to A. H. Balliet Corporation, Allentown, Pa. Filed May 20, 1938. 42 claims. (Cl. 93-42).

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2,243,158. Apparatus for treating screen plates. Johan Rikard Johansson, Stockholm, Sweden. Filed Oct. 26, 1937. 3 claims. (Cl. 29-90). A non-cutting pressure-applying tool, the use of which increases the resistance to wear of a screen plate of a pulp strainer.

2,243,199. Carton feeding mechanism for packaging machinery. Harry L. Evans, assignor to United States Automatic Box Machinery Co., Inc., Roslindale, Mass. Filed Feb. 9, 1939. 14 claims. (Cl. 93-53).

2,243,284. Alterproof check or paper. William E. Niece, assignor of 70 per cent to William J. Dammarell, Cincinnati, Ohio. Filed March 7, 1940. 3 claims. (Cl. 283-9). The paper is formed with a continuous area provided with numerous adjacently-disposed breaks or ruptures projecting from both the front and rear of the check.

2,243,352. Paper container forming mechanism. Kenneth W. Macdonald and Oskar W. Wikstrom, assignors to United States Automatic Box Machinery Co., Inc., Roslindale, Mass. Filed Oct. 8, 1940. 20 claims. (Cl. 93-51).

2,243,409. Bituminous composition. Emile L. Baldeschwieler, assignor to Standard Oil Development Company, Linden, N. J. Filed Sept. 4, 1937. 3 claims. (Cl. 106-31). The adhesivity of a bituminous composition is improved by adding 1-2.5 per cent of an asphalt-soluble lead soap and heating at 210-350 deg. F. for at least five days.

2,243,481. Furfuryl alcohol resin. John G. Meiler, assignor to Marathon Paper Mills Company, Rothschild, Wis. Filed May 1, 1939. 8 claims. (Cl. 260-2). Furfuryl alcohol is reacted with lignosulphonic acid or its salts.

2,243,519. Asphalt emulsion and method of preparing same. Edwin J. Barth, assignor to Sinclair Refining Company, New York, N. Y. Filed Jan. 6, 1937. 6 claims. (Cl. 134-1). An emulsion miscible with water is prepared by the use of wax acids soap (aluminum, copper, lead or iron) and sodium hydroxide.

2,243,557. Device for handling sheet material. Robert F. Finster, assignor to Hammermill Paper Company, Erie, Pa. Filed Dec. 11, 1939. 10 claims. (Cl. 271-52). Means for rotating sheet material in its own plane.

2,243,604. Device for applying films of coating material to paper webs. Leonard Parkinson, Park Falls, Wis. Filed May 5, 1939. 8 claims. (Cl. 91-50). A swinging carriage, a riding roll, pick-up roll and a smoothing and leveling roll.

2,243,631. Barking drum. Axel Gustaf Johansson, Nalden, Alfred Mauritz Isidor Gidlöf, Ljusne, Sten Bergström, Stockholm and Bror Manne Olsson, Nalden, Sweden. Filed Nov. 3, 1938. 5 claims. (Cl. 144-208).

2,243,773. Papermaking machinery. Herbert Charles Randell, assignor to Walmsleys (Bury) Limited, Bury, England. Filed Jan 19, 1939. 3 claims. (Cl. 92-43). A cylinder machine.

2,243,805. Bag closing and sealing machine. John L. Knapp, St. Joseph, Mo. Filed Jan. 27, 1940. 17 claims. (Cl. 93-6).

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2,244,033. Automatic electric control for compensator for felt tension device for papermaking machines. William J. Trempe. North Billerica, Mass. Filed Dec. 28, 1936. 12 claims. (Cl. 92-49).

2,244,268. Device for binding the edges of sheet material and the like. Harold K. Smeltzly, Ingram, Pa., assignor of one-half to Ralph E. Meech, Bellevue, Pa. Filed April 18, 1940. 11 claims. (Cl. 93-1). A device for applying a reeinforcing adhesive tape to the edges of sheet material.

2,244,282. Art of making liquid-tight containers. Robert Morris Bergstein, Cincinnati, Ohio. Filed Dec. 19, 1939. 8 claims. (Cl. 93-39.1). A method of treating a closure cap in place with molten thermoplastic material to fill crevices at the corner portions.

2,244,410. Tanning preparation and method of making the same. Frederick J. Wallace, assignor to Robeson Process Company, New York, N. Y. Filed July 31, 1940. 10 claims. (Cl. 260-124). Sulphite waste liquors which have been fermented and which contain copper-precipitating compounds are treated with chlorine to diminish the content of such compounds.

2,244,486. Molded pulp article. Merle P. Chaplin, assignor to Chaplin Corporation, South Portland, Maine. Filed Nov. 30, 1936. 4 claims. (Cl. 229-2.5).

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2,244,685. Paraffin emulsion. James H. Fritz and Ralph M. Beach, assignors to National Oil Products Company, Harrison, N. J. Filed Oct. 13, 1938. 13 claims. (Cl. 252-311). The emulsifier consists of a water-soluble soap, a higher fatty acid and a saponifiable wax in a mutual solvent for water and fatty material.

2,244,723. Envelope machine. Abraham Novick, assignor to F. L. Smithe Machine Co., Inc., New York, N. Y. Filed July 30, 1936. 17 claims. (Cl. 93-61).

2,244,746. Papermaking machine. Fred S. Van Voorhis, Saugerties, N. Y. Filed Aug. 10, 1939. 6 claims. (Cl. 92-44). A means for adjusting the flow of pulp from the pulp-delivery chamber to the Fourdrinier wire.

2,244,795. Coated sheet material and article made therefrom. Floyd E. Williams, assignor to Marabon Corporation, Gary, Ind. Filed April 22, 1937. 8 claims. (Cl. 229-55). A coated paper bag capable of retaining oil for an extended period of time.

2,244,859. Coating apparatus. William F. Thiele and Howard Brewster Richmond, assignor of nine-tenths to Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., and one-tenth to Peter J. Massey, River Forest, Ill. Filed Jan. 20, 1939. 4 claims. (Cl. 91-50). A coating device for paper on the single drying drum of a Yankee type paper machine.

2,244,864. Indicator and control, particularly for paper machines. George Stanford Witham, Jr., Portland, Oreg. Filed Aug. 25, 1937. 3 claims. (Cl. 33-125). A means for determining the width of a traveling web.

2,244,873. Container sealer. John F. Ferguson, assignor to J. L. Ferguson Company, Joliet, Ill. Filed Sept. 12, 1938. 20 claims. (Cl. 93-6).

2,245,014. Stretchable paper. John C. Sherman, assignor to American Reenforced Paper Company, Attleboro, Mass. Filed Aug. 29, 1936. 4 claims. (Cl. 92-39). A wet paper forming pulp is fluted in continuous parallel zones alternating with unfluted parallel zones and the fluted zones while still wet is subjected to pressure to cause the fluted zones to revert essentially to their initial flat condition.

2,245,045. Coated paper. William J. Montgomery and Donald B. Bradner, assignors to The Champion Paper and Fibre Company, Hamilton, Ohio. Filed July 17, 1935. 4 claims. (Cl. 41-26). Paper has at least two coatings on the same side, one coating being in the form of a mechanograph and inlaid with respect to the other.

2,245,062. Shingle. Herbert Abraham, assignor to The Ruberoid Co., New York, N. Y. Filed Feb. 3, 1941. 8 claims. (Cl. 108-7). An asphalt shingle.

2,245,063. Bag mouth trimming and creasing device. Howard G. Allen, assignor to Consolidated Packaging Machinery Corporation, Buffalo, N. Y. Filed July 25, 1940. 5 claims. (Cl. 93-6).

2,245,109. Felt cleaner. Lawance L. Laneyrouse, Chickasaw, Ala. Filed March 1, 1938. 1 claim. (Cl. 92-50). A series of rollers with opening by means of which water is removed from the felt by a vacuum.

2,245,193. Machine for chaping cartons. Carl Wilhelm Hartmann, assignor to Satona Limited, Edinburgh, Scotland. Filed April 27, 1940. 9 claims. (Cl. 93-53).

2,245,494. Waxed paper. Frederick Warde Padgett, assignor to Moore & Munger, Plainfield, N. J. Filed May 28, 1938. 7 claims. (Cl. 260-28). A fully refined petroleum wax and 0.05-2 per cent of an esterified product of montan wax are used.

2,245,499. Cellulose derivative, wax emulsion for coating wrapping materials. Frank H. Reichel and Augustus Edward Craver, assignors to Sylvania Industrial Corporation, Fredericksburg, Va. Filed June 7, 1939. 12 claims. (Cl. 91-68). A cellulose ester, ether, mixed esters, with or without a wax, in a volatile organic solvent and a small amount of a solid organic hydrophilic colloid.

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2,245,675. Method of making paper bags. Oscar H. Hultin, assignor to Pneumatic Scale Corporation, Limited, Quincy, Mass. Filed Feb. 11, 1938. 2 claims. (Cl. 93-35).

2,245,678. Pulp molding apparatus. Andrew Keiding, assignor to American Lace Paper Company, Milwaukee, Wis. Filed July 8, 1937. 9 claims. (Cl. 92-54).

2,245,708. Coating process. Carl W. Patton, assignor to Carbide and Carbon Chemicals Corporation, New York, N. Y. Filed March 9, 1938. 6 claims. (Cl. 91-70). A method of applying vinyl resins.

2,245,900. Method of making paper cups. Herman Carew, assignor to Dixie-Vortex Company, Chicago, Ill. Filed Aug. 12, 1938. 13 claims. (Cl. 93-36.1).

2,246,030. Method of dispersing titanium dioxide pigments. Robert William Ancrum and Assur Gjessing Oppegaard, assignors to Titan Company, Inc., Wilmington, Del. Filed Sept. 2, 1938. 6 claims. (Cl. 134-58). Titanium dioxide pigment is dispersed in water in the presence of a basic halide of aluminum, cerium, iron, titanium or the like.

2,246,043. Machine for making tubes. Ferdinand Heinmets, Princeton, N. J. Filed Oct. 3, 1940. 9 claims. (Cl. 93-82).

2,246,062. Titanium dioxide composite pigment and method of making same. Walter W. Plechner and Hugh V. Alessandroni, assignors to National Lead Company, New York, N. Y. Calcined titanium dioxide and calcium sulphate are subjected to a pulverizing milling treatment in a mill of the ring roll type.

2,246,085. Composition and process for softening leather, paper, and textile materials. Luther B. Arnold, Jr., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed Feb. 23, 1938. 5 claims. (Cl. 134-11). A paste containing 1-50 parts of urea and 1 part of a mixture obtained by the conjoint sulfonation of an alcohol of least 8 carbon atoms and a higher petroleum hydrocarbon.

2,246,481. Hydrogenation of lignin sulphonic acid. Homer Adkins and Guy C. Howard, assignors to Marathon Paper Mills Company, Rothschild, Wis. Filed Oct. 7, 1939. 23 claims. (Cl. 260-124). Sulphur-containing lignin derivatives are partially desulphurized and then hydrogenated.

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2,246,501. Glossmeter. Donald B. Bradner and George C. Munro, assignors to The Champion Paper and Fibre Company, Hamilton, Ohio. Filed March 1, 1939. 8 claims. (Cl. 88-14).

2,246,531. Apparatus for saturating fibrous stock. Izador J. Novak, assignor to Raybestos-Manhattan, Inc., Bridgeport, Conn. Filed Jan. 30, 1937. 7 claims. (Cl. 91-18). Apparatus for adding saturant to a wet fibrous web.

2,246,541. Safety paper. John Q. Sherman and Wilbur A. Yackley, Dayton, Ohio; said Yackley assignor to said Sherman; Katherine M. Sherman, *et al.*, executors. Filed Jan. 7, 1937. 8 claims. (Cl. 91-67.95).

2,246,669. Pulp screening apparatus. Elijah Cowan, Dolbeau, Quebec, Canada. Filed June 13, 1938. 4 claims. (Cl. 92-34). A screen of the "quiller" type.

2,246,858. Box covering machine. Charles A. Phelps, assignor to Parker Brothers, Incorporated, Salem, Mass. Filed Jan. 18, 1940. 10 claims. (Cl. 93-54.2).

2,246,911. Siftproof bag. Webster Noyes Baker, assignor to Bagpak, Inc., New York, N. Y. Filed July 13, 1940. 6 claims. (Cl. 93-35). Method of forming a square bottom siftproof bag.

2,246,957. Continuous rotary sheering mechanism. Albert F. Shields, assignor to S. & S. Corrugated Paper Machinery Co., Inc., Brooklyn, N. Y. Field Feb. 20, 1939. 23 claims. (Cl. 164-66).

2,246,983. Coating composition and method of making the same. Elmer B. Oberg, assignor to United State Gypsum Company, Chicago, Ill. Filed Oct. 14, 1937. 6 claims. (Cl. 134-46). The normal solution-viscosity of a protein is decreased by degradation with an enzyme, followed

by heating within the range of about 150 deg. F. to the boiling point to deactivate the enzyme.

2,246,987. Continuous molding apparatus. Carlisle K. Roos, assignor to United States Gypsum Company, Chicago, Ill. Filed Oct. 23, 1937. 4 claims. (Cl. 154-1). Method of wallboard manufacture.

2,247,069. Severing mechanism for bag making machines. Tom Sargent and Samuel Duerden, assignors to Strachan & Henshaw, Limited, Whitehall, Bristol, England. Filed Dec. 8, 1939. 5 claims. (Cl. 164-84.5).

2,247,204. Method of producing moldable lignocelluloae and product thereof. Arlie W. Schorger and John H. Ferguson, assignors to Burgess Cellulose Company, Freeport, Ill. Filed July 16, 1938. 8 claims. (Cl. 106-163). A subdivided natural lignocellulose is cooked with water for less than 3 hours at a temperature of approximately 185-200 deg. C. in the presence of an alkaline substance having a water solubility of at least one per cent at 100 deg. C. to form a thermoplastic product and in an amount sufficient to neutralize the liberated acids.

2,247,205. Molded lignocellulosic product. Arlie W. Schorger and John H. Ferguson, assignors to Burgess Cellulose Company, Freeport, Ill. Filed Sept. 12, 1938. 10 claims. (Cl. 106-199). A thermoplastic lignocellulosic material having the property of plastic flow under heat and pressure molding conditions of 185 deg. C and 3000 pounds per square inch with formation of hard, water-resistant, resin-like products is produced by heating a natural lignocellulose material with water at 135-195 deg. C. for 15 min. to one hour in the presence of an acid-neutralizing agent.

2,247,206. Method for making moldable lignocellulosic material and product thereof. Arlie W. Schorger and John H. Ferguson, assignors to Burgess Cellulose Company, Freeport, Ill. Filed Nov. 25, 1938. 14 claims. (Cl. 106-39). A natural lignocellulosic material is heated at 150-210 deg. C. for up to 3 hours with a liquor comprising a mixture of water and a neutral organic solvent for lignin, which process gives a thermoplastic material.

2,247,207. Method for treating lignocellulosic material and product thereof. Arlie W. Schorger, assignor to Burgess Cellulose Company, Freeport, Ill. Filed Nov. 25, 1938. 12 claims. (Cl. 106-203). A thermoplastic lignocellulosic material capable of being hot-molded under pressure is prepared by depositing on a thermoplastic lignocellulosic material sufficient lignin derived from a solution of lignin in an organic solvent.

2,247,208. Moldable lignocellulosic material and method for making the same. Arlie W. Schorger, assignor to Burgess Cellulose Company, Chicago, Ill. Filed Dec. 5, 1938. 10 claims. (Cl. 18-48). A moist mass of lignocellulosic molding composition is subjected to heat and mechanical pressure and disintegrating the compressed material to powder.

2,247,209. Method of making moldable lignocellulosic material and product thereof. Arlie W. Schorger, assignor to Burgess Cellulose Company, Freeport, Ill. Filed Aug. 26, 1939. 13 claims. (Cl. 260-9). A thermoplastic lignocellulose capable of being hot-molded results from heating an intimate mixture of a natural lignocellulose and 1-15 per cent of aniline, with a catalyst, at 100-225 deg. C.

2,247,210. Method of preparing lignin and product thereof. Arlie W. Schorger, assignor to Burgess Cellulose Company, Freeport, Ill. Filed Jan. 4, 1940. 7 claims. (Cl. 260-124). A thermoplastic lignin is obtained by extracting a natural lignocellulose which has been heated with water for 3 hours at 150-250 deg. C. with a neutral organic solvent for lignin.

2,247,297. Machine for testing and matching color. Charles E. Hoover, Jr., Maplewood, N. J. Filed Sept. 8, 1939. 8 claims. (Cl. 73-51). A mulling device for testing or matching samples of pigment for color or shades of color.

Big Demand for Paper Dictionary

One year after its publication, the Dictionary of Paper has piled up an unusual record of distribution and service. Nearly all of the original three thousand bound copies have been sold, and continued interest in the book predicts that the remaining two thousand unbound copies will have to be assembled very soon to meet new subscriptions.

It will be recalled that the dictionary is the culmination of a three-year project initiated by the American Paper and Pulp Association. Working through its Committee on Classification and Definitions and the Institute of Paper Chemistry, the association enjoyed the complete and sincere cooperation of the entire industry. As a result, the dictionary approaches a definitiveness and authority far beyond other efforts in this field.

An evidence of the appreciation of the value of this book may be found in its world-wide distribution. From this point of view, the book appeared at a most unfavorable time, because Europe was just becoming involved in the throes of the terrific struggle which put the question of definitions in the background. Nevertheless, orders were received from over twenty-five countries, an astonishing response for any type of publication. Among the countries having the dictionary within their borders are: Cuba, Mexico, Peru, Argentina, England, Eire, Scotland, India, Australia, South Africa, New Zealand, Tasmania, Finland, Norway, Sweden, France, Belgium, Holland, Switzerland, China, Japan, Russia, Hungary, Germany, and Italy.

The United States and its territories have accounted for approximately 2,400 of the copies delivered. All but four states (Montana, Nevada, New Mexico, and North Dakota) have the book, as do the District of Columbia, Hawaii, and the Philippines. The four states leading in sales are New York, Wisconsin, Ohio, and Illinois. Not only have copies been sold to pulp and paper manufacturers, converters, and consumers, but the purchasers include United States Government departments and agencies, state and city purchasing departments, banks, insurance companies, traffic associations, and others . A substantial number of public and school libraries have the volume on their shelves.

Copies of the dictionary are still available from the American Paper and Pulp Association at $5.00 per volume.

It's Cheaper to Hire Foresters

"Across the United States are thousands of examples of mistakes which cannot be corrected for hundreds of years. These mistakes have been made in most cases by well-meaning men because of their ignorance of the rules of nature which govern the growth of trees. Some of these are not mistakes at all but are due to deliberate intention, with full knowledge of the devastating results that follow in relation to the greedy cutting of forest trees," says Professor Raymond J. Hoyle of the New York State College of Forestry at Syracuse University, Syracuse, N. Y.

"The serious aspects of these mistakes is that when they are once committed they cannot be corrected during the average lifetime of man. For this reason it becomes necessary to pay particular attention to the harvesting of timber in order to prevent these long-time economic penalties.

"In the early days," says Professor Hoyle, "there was such a profound ignorance on this subject that few persons paid attention to the fact that when they were cutting trees they might be ruining a natural resource that would tremendously and detrimentally affect that particular locality and even the state and the Nation.

"This situation calls for the services of trained men." Professor Hoyle continues, "It can't be done by owners, generally speaking, without competent advice, any more than a person can try his own lawsuits, perform his own surgery or build his own automobile.

"If a person owns a forest of any considerable extent he will save money by employing a forester trained to handle his problem. Thus the owner will not only prevent the development of worthless forests but will establish a constantly-producing and profitable forest property." Professor Hoyle urges that the owner of a woodlot should always keep in mind that forests differ from other crops because when a mistake is made in the harvesting of the forest it cannot be corrected in many years.

June Paper Box Shipments Up

Shipments of folding paper boxes into the New York metropolitan area in June by members of the Folding Paper Box Manufacturers Association totaled $992,441. This compares with $893,705 in May and $734,686 in June last year.

Effect of Calendering Pressure on Sheet Properties*

By G. E. Mackin[1], E. L. Keller[2], and P. K. Baird[3]

Abstract

Check runs were made on book, bond, and kraft wrapper grades. The paper properties tested included bursting, tearing, and tensile strengths, folding endurance, gloss, sizing, porosity, oil penetration, and thickness.

The bursting strength is but slightly affected by the calendering pressures used. A trend toward a decrease in tearing resistance with an increase in calender pressure was apparent. Gloss increased with an increase in calender pressure. The response of different grades to calendering was observed in the gloss values. Porosity was found to follow the same trends as those shown by gloss—i.e., the porosity decreased with an increase in calender pressure. The size number was found to increase with an increase in calender pressure. The effect on folding endurance was somewhat variant, but in general a decrease in fold accompanied an increase in calendering pressure. Relationships between calender pressure and both solid fraction and thickness properties have been expressed mathematically, with the thickness decreasing and the solid fraction increasing proportionately when calender pressure was increased. Tensile strength was found to exhibit a relationship to calender pressure although this property passed through a maximum at high calendering pressures.

The control of the calendering process with its effects on the various properties of paper presents a major problem in the production of paper that must meet the increasing demand for exacting specifications. The divergence of opinion of those concerned with the problem and the lack of experimental data furnished the incentive for conducting a detailed study at the Forest Products Laboratory[4] of the fundamental relationships involved in the calendering process.

It is obvious that inasmuch as calendering occurs at the end of the papermaking process, many of the preceding conditions, such as furnish, formation, press operation, and moisture content, determine the properties of the sheet and in some respects to a much greater degree than does calendering itself. However, the primary effects of calendering; namely, the reduction of sheet thickness and the increase in finish, are evident regardless of type of paper or other conditions. What effects calendering has on other properties are for the most part unknown, but it is believed that the relationships between these properties and the variables in calendering, such as pressure applied, temperature, speed, draw, size of rolls, moisture content, and the like, when fully established will be of practical value to the paper industry. While a study of all the variables of calendering is doubtless desirable, the experiments thus far conducted at the Forest Products Laboratory and reported herein are concerned mainly with the relationship between roll pressure and the physical properties of paper. Brief studies of some of the other related variables were included during the experiments in order to furnish a background for conclusions from the data obtained. More exhaustive researches will follow in this series as opportunity is afforded.

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Hotel Roosevelt, New York, N. Y., Feb. 17-20, 1941.

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[3] Member TAPPI, Senior Chemist, Forest Products Laboratory, Madison, Wis.

[4] Forest Service, U. S. Department of Agriculture; maintained at Madison, Wis., in cooperation with the University of Wisconsin.

Literature

Most of the scant data available on calendering were obtained under certain process conditions as to furnish, jordaning, forming, pressing, and drying, or were not typical of commercial practice due to the use of disproportionate equipment, such as only two 3-inch calender rolls. In one of the early discussions of super-calendering, Pauli *(5)* pointed out the changes brought about in bulk, color, opacity, transparency, and particularly in the water resistance due to sizing. The importance of the moisture content of the sheet was stressed. Hassehaus *(3)* reported that tensile strength was not much affected; some increase was found, however, if the paper was rather damp; folding strength and elasticity increased; area of the sheet increased, more in the cross-machine than in the in-machine direction; and thickness decreased.

Strachan *(8)*, after referring to the decreased thickness, improved smoothness, and transparency as the result of calendering, remarks that too drastic calendering conditions result in a loss instead of an increase in strength. Tests with a 3-roll supercalender on varied printing and writing papers are presented by Possanner *(6)*. Tensile, bursting, and folding strengths, as well as stretch, increased with supercalendering; thickness and size resistance decreased.

Simmonds and Baird *(7)* have developed an equation correlating calendering pressure, ream weight, and thickness, and also an equation correlating calendering pressure with solid fraction and thickness.

Ant-Wuorinen *(1)* in a study of the compressibility of newsprint and its components, using a single-nip calender, has collected some interesting data on the compressibility, elasticity, and plasticity of sulphite and groundwood pulps. "Quite irregular relationships" were found on plotting the decrease in thickness of some 36 samples of newsprint in the calender against solid fraction, ream weight, thickness, sulphite content, and surface smoothness.

Brecht *(2)* in the course of presenting the influence of such variables as composition of the paper, degree of beating, moisture, pressure, speed, and temperature, on the effects of supercalendering, reports that, with increasing pressure, smoothness, gloss, transparency, breaking length, folds, and solid fraction rise, whereas reflectance, tear, thickness, and air permeability, fall off. Stretch does not appear to be decisively affected by calendering. Brecht points out

that the effect of calendering does not increase in proportion to the pressure applied, because the width of pressure zones increases with calender pressure. This consideration is of much greater significance when alternate steel and paper rolls are used, as was the case in his investigations, than when chilled iron or steel rolls are used throughout.

Hughes and Roderick *(4)* found that the calendering of coated papers resulted in lower wax pick, lower ink receptivity, lower opacity, and lower brightness.

Forest Products Laboratory Equipment

The calendering results here reported were obtained on papermaking equipment of exceptionally high precision as reflected in the excellent checks obtained during the experimental runs. The Fourdrinier paper machine is complete in practically every respect, being a miniature of an average commercial machine but incorporating much greater completeness and precision in variable control than is found in commercial operation. A detailed description of the equipment follows:

Beater

A 50-pound capacity beater having an 18-inch counterbalanced roll fitted with bronze tackle is used for beating, slushing, and mixing the wet lap pulp prior to jordaning.

Jordan

Two small jordans with 12-inch diameter shells and stainless-steel fillings are available. The speed range is from 600 to 1800 r.p.m. Plug pressure is applied by means of a pneumatic cylinder through a simple lever arrangement and controlled by a pressure regulator.

Stock Chest

A vertical wooden tank with a capacity of 150 pounds of moisture-free pulp constitutes the stock chest. Three pairs of rotating paddles extending the full diameter of the tank maintain uniformity of the contents. A 4-inch centrifugal pump circulates the pulp suspension continuously through the stuff meter and back to the chest during the time the paper machine is in operation. The operation does not include a machine chest, so that control over the degree of processing applied to the stuff is simplified.

Alum Feed System

Continuous pH control of the stock on the Fourdrinier wire is afforded by regulating the amount of alum solution flowing into the mixing box from a pneumatic reservoir.

Paper Machine Screen

A conventional two-plate flat screen fitted with 12-cut plates comprises the screen section. It is independently driven and equipped for use of selected plate cut sizes.

Paper Machine

Electric Drive. The paper machine and accessory parts, such as the stuff and white water meters, are driven by differential synchronous motors energized from an alternator direct connected through a gear change transmission to the adjustable speed direct current prime mover. This drive is of special design for research purposes, and is constant in speed characteristics and sensitive to minute adjustments for control of draws between sections and other accessory units. It has a speed range from 20 to 325 feet per minute and plus and minus draw adjustments from 0 to 25% for regular and creping operations. All sectional speeds can be changed synchronously by a simple adjustment of the prime mover.

Fourdrinier Section. Stock is carried from the screen to the flowbox by means of an open trough having a width approximately equal to the width of the deckle. The flowbox delivers stock to the wire through a modified Voith inlet to a 36-foot wire having an 18-inch width. Thirty-six table rolls, 3 suction boxes connected to a vacuum pump, and a 6-inch dandy roll and other accessory equipment constitute the Fourdrinier section. The shake is adjustable for amplitude and frequency, and all other necessary controls were available for process control in this section.

Stuff Meter. A positive-displacement metering device developed at the Laboratory delivers a controlled flow of circulating stock to the mixing box. It is driven in differential synchronism with the master electric drive for the paper machine.

White Water System. Tray and suction box water is collected in a box equipped with a metering device which delivers a controlled quantity of white water to a centrifugal pump discharging into the stuff mixing box. It is driven in the same manner as the stuff meter.

Press Section. Two straight and one reversing press equipped in the following order with 11-inch granite, brass, and brass top rolls, make up the press section. All presses are fitted with rubber-covered bottom rolls, superfine felts, and pneumatic cylinders for control of loading.

Drier Section. A total of twenty 15-inch driers in 2 sections, one containing 12 and the other 8 driers, constitute this section. Automatic temperature regulation is obtained indirectly by means of an air valve, steam pressure controller. Both top and bottom drier felts are used.

Calender Section. The calender stack consists of a single vertical bank of 7 chilled-iron rolls, the bottom roll being the driven roll. Dimensions, weights, and nip pressures are given in Table I. The effective nip pressures may be increased by means of a lever system, having an over-all mechanical advantage of 12.4, operated by two pneumatic cylinders with a total piston area of 5.5 square inches (Fig. 1).

TABLE I.—CALENDER STACK SPECIFICATIONS

Position of roll	Diameter of roll inches	Weight of roll pounds	Total pressure at nip [1] pounds	Summation of nip pressures [1] pounds
Top	9⅛	344		
			514	514
Intermediate	5⅞	129		
			643	1157
Intermediate	5¾	131		
			774	1931
Intermediate	5¾	130		
			904	2835
Intermediate	5¾	129		
			1033	3868
Intermediate	6⅛	183		
			1216	5084
Bottom	7⅛	255		

[1] Including 170 pounds due to effective weight of loading system at zero pounds air pressure.

Evaluation of Paper and Process Conditions

The first runs were made to compare commercial book paper with that made at the Laboratory. The

TABLE II.—COMPARISON[1] OF PAPERS

	Laboratory book	Commercial book
Thickness, inch	0.003	0.003
Gloss, %	28-29	30-30
Smoothness	130-150	180-210
Size number, seconds	10	36
Bursting strength	12.5	12.0
Porosity time, seconds	102	100
Ash, %	10.8	15.0

[1] Comparison made by the Consolidated Water Power and Paper Company.

properties of the Laboratory sheet as compared with a similar commercial paper are given in Table II. As may be noted, the commercial book contained about 40% higher ash content than did the Laboratory paper, and this fact probably is the reason for the higher gloss and smoothness values reported. However, since in most respects the Laboratory paper appeared satisfactory, this furnish was considered suitable for the calendering researches of this series.

Control of Process Conditions

The stock was kept well agitated in the chest to maintain a uniform consistence. The volume of stock delivered to the paper machine by the stuff meter was directly proportional to the speed at all times. Since the speeds of the paper machine and stuff meter are synchronized, it was possible to hold a constant ream weight throughout the runs. The pH value of the stock on the wire was controlled by the addition of alum in solution at the mixing box. An indicating glass electrode pH meter was used at the headbox. Since the white water metering device is synchronized with the paper machine speed, the flow of stock on the wire was accurately controlled to maintain a uniform formation during each run. The pneumatic control of the press roll loading system eliminated variations in press operation. The temperature controller on the driers, while not directly indicative of the moisture content of the sheet, apparently held moisture conditions constant at this point. It is apparent therefore that the paper reached the calender stack under the desired constant conditions. The control of the calendering operation has already been described. To further insure uniform operating conditions, enough stock was prepared for each run to permit all the preceding machine variables to be adjusted and held constant, the test portion of the runs being selected over a relatively short period of time.

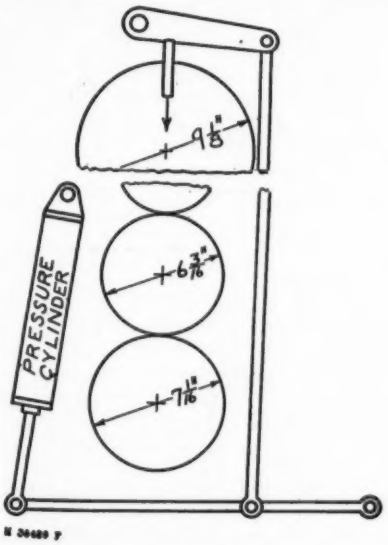

FIG. 1

Calender Stack, Showing Loading System

Fiber Processing Variations

During the preliminary runs it was found necessary to prejordan the stock to eliminate the small fiber processing variations. In one series of runs this variation nearly offset the changes due to calendering, and when the same furnish was prejordaned these variations disappeared.

Operating Speed

It is a generally accepted theory that there is an optimum operating speed on any particular paper machine for each different furnish and for each ream weight. This condition has been observed on the Laboratory machine in the past. It is no doubt a practical way of balancing the many variables of the process to an average optimum result. Therefore, in order to obtain the best formation for the three different ream weights, each ream weight should be made at its optimum speed. The change in speed, however, was believed to have an appreciable influence on the calendering effect. An experimental run was made to determine to what extent the speed variable might influence the calendering effects. A roll of uncalendered paper which was made under a single set of conditions was placed between the drier sections, run through the last drier section to maintain uniform moisture content, and then calendered at two speeds and two loading pressures. The results, which are given in Table III, reveal that sheet properties were appreciably affected by speed of calendering.

From the data in Table III it was concluded that with an increase in speed of calendering, a corresponding increase in pressure is necessary to obtain the same results in finish, bulk, and other sheet properties. For this reason the optimum speed for the average ream weight of a series of runs should be used for all three ream weights, a procedure which was adhered to during the calendering runs.

TABLE III—EFFECT OF CALENDER SPEED ON SHEET PROPERTIES

Machine run	Speed ft./min.	Pressure lb./ lin. in.	Tensile lb./ sq. in.	Gloss %	Porosity sec.	Solid fraction ratio	Thickness mils
1591	25	410	4170	33	122	0.52	3.87
1592	200	410	3910	29	105	.50	3.98
1593	25	2040	4680	44	174	.60	3.40
1594	200	2040	4180	35	129	.56	3.68

Calendering Conditions

The selection of the proper calendering conditions for this study was determined from a preliminary series in which a comparison of the same total pressure was made using one nip and six nips. These data are reported in Table IV. As was presumed, the calendering effect was decidedly different for this variation. The differences observed in these sheets indicated the advisability of using only one condition of calendering, and since much higher total pressures

TABLE IV.—EFFECT OF NUMBER OF NIPS ON SHEET PROPERTIES

Machine run	Number of nips	Pressure lb./ lin. in.	Tensile lb./ sq. in.	Gloss %	Thickness mils	Porosity sec.	Solid fraction ratio	Size number
1477	6	410	4530	23	3.85	64	0.50	1.3
1479	1	410	5220	26	3.51	72	.55	1.7

were possible with six nips, this procedure was used during the experimental runs.

H-ion Concentration Control

The importance of accurately controlling the pH value of the stock on the wire was emphasized in one series of runs when it was found that the alum system failed during the test portion of the runs. The pH value rose from 4.5 to about 6.5, and the resulting effect on the sheet properties were significant. Variations up to about 20% occurred in the strength values, and an increase of nearly 30% was shown in the size and porosity values. In view of these findings it was deemed necessary to control the pH value of the stock on subsequent runs very carefully.

Moisture Content

One of the significant findings during the experiments was the fact that the moisture content of paper going through the calender stack was much lower than that which is generally considered average. For example, most of the book paper was calendered at about 2% moisture content, since the sheet tended to blacken when run much wetter. However, after a few moments exposure to the air in the machine room the moisture content rapidly increased and the same paper tested between 3.5 and 4% after about 5 minutes exposure. Table V indicates the change in moisture content of the paper after 4 hours exposure to the air in the machine room where the relative humidity averaged about 45%.

TABLE V.—MOISTURE CONTENT AT CALENDERS AND CORRESPONDING MOISTURE CONTENT AFTER EXPOSURE TO THE AIR

	Groundwood book paper	
Machine run	Moisture content at calenders	Moisture content after 4 hours exposure [1]
1426	1.82	5.03
1427	1.68	5.04
1428	1.58	5.10
1429	1.37	5.00
1430	1.59	5.02
1431	1.47	5.02
1432	1.55	4.92
1436	1.45	5.04
1437	1.46	5.02
1438	1.39	5.00
Average	1.54	5.02

[1] Machine room conditions were 45% relative humidity, 70° F.

The rapid rate of moisture sorption undoubtedly is a contributing factor to the precision in moisture determination. During the experimental runs great care was exercised in making moisture determinations. To determine the influence of moisture content on the effect of calendering, several runs were made on the same paper, varying the moisture content from 2.4 to 4.3%. The results of tests made on these sheets are given in Table VI.

TABLE VI.—EFFECT OF MOISTURE CONTENT ON SHEET PROPERTIES

Machine run	Moisture content %	Pressure lb./lin. in.	Burst pts./lb./ream	Tear g./lb./ream	Tensile lb./sq. in.	Gloss %	Solid fraction ratio	Porosity sec.
1491	2.4	[1]0	.19	.76	1960	20	.42	53
1500	4.3	[1]0	.21	.81	2100	20	.43	62
1490	2.4	2040	.20	.72	2650	31	.55	108
1501	4.3	2040	.19	.67	2945	50	.64	149
1499	2.4	2860	.20	.70	2735	35	.58	133
1502	4.3	2860	.19	.62	3290	53	.67	182

[1] Uncalendered.

From the data in Table VI it is apparent that the effect of calendering increases with an increase in moisture content. While the increases in tensile, gloss, and solid fraction are significant and might in certain instances be desirable, it must be kept in mind that the paper with 4.3% moisture content blackened appreciably upon calendering and therefore falls outside the range of acceptable practice.

Influence of Draw

The influence of draw on the effect of calendering was briefly investigated. The procedure followed was to increase the draw between the driers and the calender stack to the maximum or just to the breaking point of the paper, then adjust to an optimum draw, and next slacken till the sheet ran loose. Samples were taken under each condition and tested; the results are given in Table VII.

TABLE VII.—INFLUENCE OF DRAW ON THREE SHEET PROPERTIES

Draw	Solid fraction ratio	Gloss %	Porosity seconds
Tight	0.56	29	137
Average	.56	29	142
Slack	.56	29	140

No noticeable change appeared in the properties shown in Table VII, and therefore it was concluded that draw was without appreciable effect at this point in the process. The effect of draw variations at the press sections was not determined but was held constant.

Roll Slippage

Many papermakers contend that roll slippage increases down the stack, whereas others believe that there is no slippage at all. One investigator *(9)* states that after careful measurements were made, no slip was found to exist between calender rolls, and that the slight increase in speed was due to paper stretch. This seems to be the only reference which is based on definite data obtained from tests. In discussing the influence of pressure and friction between calender rolls, Brecht *(2)* states ". . . it is quite unknown to what extent is the share of each component in producing the effect, and unknown, too, is the nature of the causes that produce the friction. . . It is entirely guesswork, for which reason I refrain from discussing these speculative theories." For the experiments here reported a reel of uncalendered bond paper was placed between the drier sections and the paper run over the last drier section and through the calender stack with a total pressure of 2040 pounds per lineal inch applied. By means of a speed indicator, measurements were taken on the spring roll, the top calender roll, the bottom calender roll, and on the paper. The results, which represent an average of five readings, are given in Table VIII.

TABLE VIII.—MEASUREMENT OF SPEEDS OF CALENDER ROLLS

	Calender speed × 2		
Drier speed × 2	Top roll	Bottom roll	Paper speed at reel × 2
542.8 ft./min.	542.8	550.6	550.6

Total increase in speed—3.9 ft./min. or 1.44%.

It is apparent from these data that the measurements must be extremely accurate. In view of the error that probably existed because of the lack of more sensitive instruments, the determining of intermediate roll speeds was not considered practicable at this time. For the same reason the conclusions reached may be somewhat modified by later experiments. From the data obtained, however, the conclusion is drawn that there is undoubtedly some slip between rolls, but that the increase in speed and consequent slippage is caused by the stretch, or extrusion, or both, of the paper. Measurements were taken

using two conditions of draw; namely, tight and slack. In both instances the speed of the bottom roll and that of the paper were exactly the same, indicating that the draw apparently has no influence on the slippage between the rolls and the paper. By measurement, the speed difference between a tight and slack draw totaled 0.13%, which indicated that to determine any slippage effect due to draw, a sensitive instrument would be required. Further indication that the difference in roll speed is due largely to stretch and elongation rather than slippage is shown by the fact that a sheet which had a low stretch value or one which is calendered lightly does not exhibit this difference in speed. For example, a news sheet showed exactly the same speed, when it left the last drier, on the calender stack, and at the reel.

Effects of Calendering on Properties of Paper

The following data indicate the relationship between calender pressure variations and resulting changes in sheet properties. These data were gathered from runs made under as nearly perfect control as possible, and represent averages of two or three check runs. The range of papers include groundwood book, two kinds of bond paper, and kraft wrapper. The range of ream weights on the book and bond paper included 35-, 50-, and 65-pound reams on a 25x38—500 basis. The range of pressures used was from zero to 2,860 pounds per lineal inch, calculated as described previously. A total of 75 machine runs, consisting of 32 on book, 33 on bond, and 10 on kraft wrapper are included.

The book furnish has already been described in Table II. The bond furnish consisted of 85% bleached hemlock sulphite and 15% bleached aspen sulphite except for the one series of southern pine sulphate bond. The kraft wrapper was 100% jack pine kraft.

The paper samples selected for test were brought

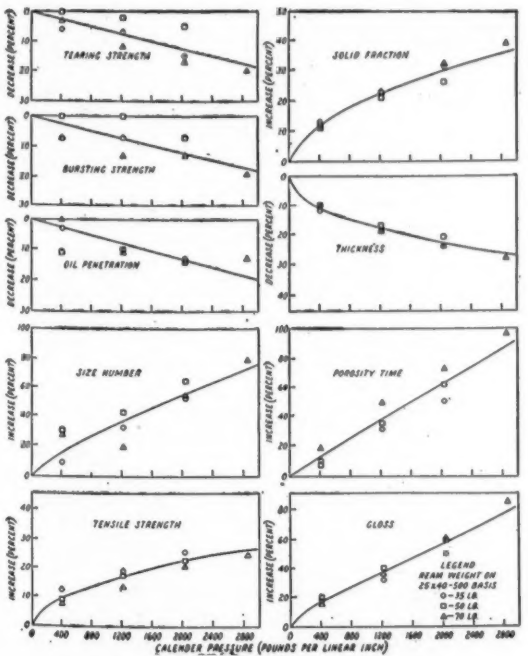

FIG. 2

Effect of Calendering on Properties of Groundwood Book

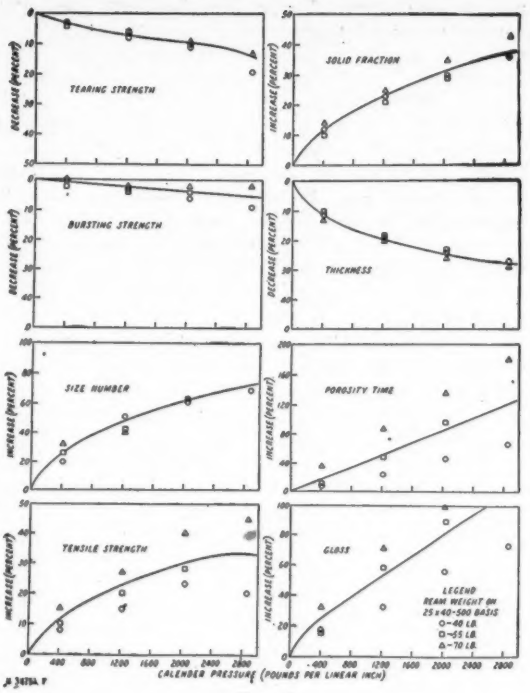

FIG. 3

Effect of Calendering Pressure on Properties of Sulphite Bond

to equilibrium in the laboratory testing room which is maintained at 72 deg. F. and 65% relative humidity. Results of the tests may be seen in Tables 9, 10, 11, and 12, and in Fig. 2, 3, 4, and 5.

It may be noted that the percentage change as well as the actual change in the sheet properties has been calculated. These calculated values permit the comparison between the ream weights more readily,

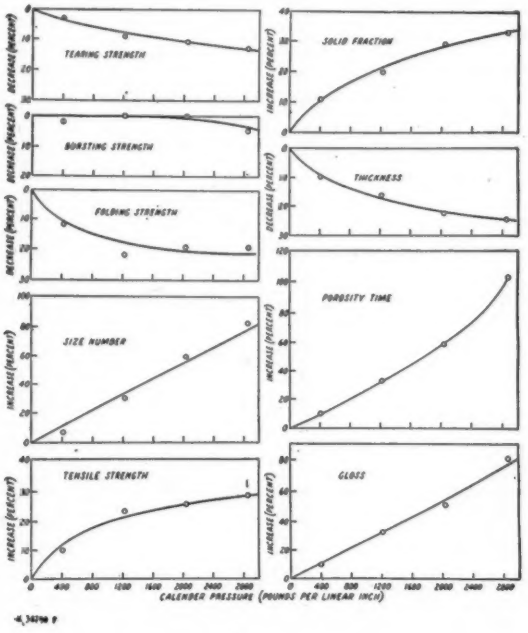

FIG. 4

Effect of Calendering Pressure on Properties of Sulphate Bond

and indicate more clearly the significance of the changes observed than do the actual values. The values reported on gloss, oil penetration, and size number are the average of values obtained on both the wire and felt sides of the paper. Tearing, tensile, and folding strengths are reported as the *average* of the values obtained from the machine and the cross directions. While there is probably some difference in the effect of calendering with respect to sheet direction, this phase was not considered at this time. Brecht *(2)* found in his investigations that the difference in gloss and smoothness between the wire and felt sides of paper when calendered is due to the procedure of calendering, and that if the paper were inverted on entering the calender stack, the resulting effect was also reversed. For this reason it was felt that the average of the values obtained on the wire and felt sides were sufficiently significant to indicate the effect of calender pressure.

Bursting Strength

Throughout the runs it was evident that bursting strength was only slightly affected by calendering. However, a trend toward a slight decrease in bursting strength with an increase in calender pressure was observed. This decrease was exhibited in all cases. No correlation between ream weight and the change in bursting strength could be found. The various furnishes were affected about the same except in the case of the kraft wrapper, where a 20% decrease was observed upon increasing the calendering pressure from 2040 to 2860 pounds per lineal inch (Fig. 5). This observation indicates that the type of furnish used influences the effect of calendering on bursting strength, especially at high pressures.

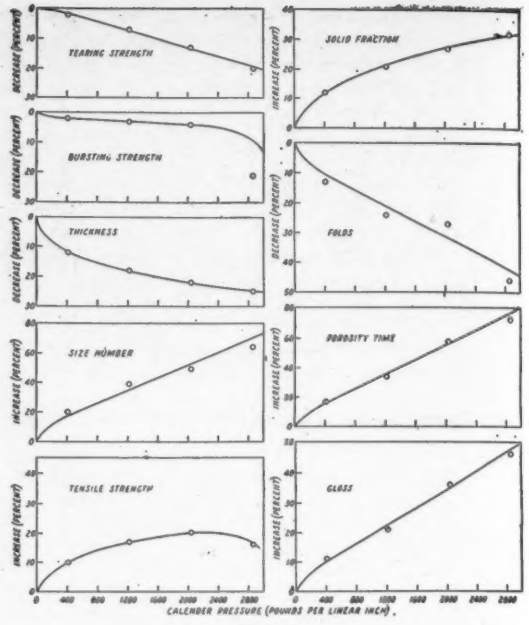

FIG. 5
Effect of Calendering Pressure on Properties of Kraft Wrapper

Tearing Resistance

A decrease in tearing resistance was found to accompany an increase in calendering pressure in every instance. Furthermore, this decrease appeared to be uniform throughout the range of pressures used. Here again, as in the case of the bursting strength, the kraft wrapper showed the greatest decrease. No

TABLE IX.—EFFECT OF CALENDERING PRESSURE ON SHEET PROPERTIES OF GROUNDWOOD BOOK PAPER

Machine run	Calender pressure, lb./lin. in.	Average: Burst, pts./lb./ream	Tear, g./lb./ream	Tensile, lb./sq. in.	Stretch, %	Gloss, %	Opacity, %	Size number	Oil number, sec.	Ream weight, 25 × 40—500	Solid fraction	Thickness, mils	Porosity, sec./100 cc.	Change in sheet properties: Burst, %	Tear, %	Tensile, %	Stretch, %	Gloss, %	Size number, %	Oil number, %	Solid fraction, %	Thickness, %	Porosity, %
										35-Pound Book (25 × 38—500)													
1460 1464 1468	0	.16	.68	2060	2.2	22	85	1.13	54	35.3	.39	3.34	38	....	....	....	....	....	....	....	....	....	....
1461 1465 1469	410	.15	.64	2310	2.4	26	86	1.23	54	35.3	.44	2.94	42	— 6	— 6	+12	+ 9	+18	+ 9	0	+13	—12	+10
1462 1466 1470	1220	.15	.63	2460	2.1	29	86	1.49	49	35.0	.48	2.71	50	— 6	— 7	+19	— 5	+32	+32	— 9	+23	—19	+31
1463 1467 1471	2040	.15	.58	2570	2.4	33	86	1.67	47	34.7	.51	2.55	57	— 6	—15	+25	+ 9	+50	+48	—13	+31	—24	+50
										50-Pound Book (25 × 38—500)													
1447 1451 1455	0	.17	.63	2260	2.4	20	92	1.11	141	55.3	.43	4.77	84	....	....	....	....	....	....	....	....	....	....
1448 1452 1456	410	.17	.63	2470	2.6	24	92	1.43	126	54.5	.48	4.30	90	0	0	+ 9	+ 8	+20	+29	—11	+12	—10	+ 7
1449 1453 1457	1220	.17	.62	2650	2.4	28	92	1.58	127	54.2	.52	3.93	113	0	— 2	+17	0	+40	+42	—10	+21	—17	+35
1450 1454 1458	2040	.16	.60	2760	2.7	32	92	1.82	121	53.7	.54	3.79	136	— 6	— 5	+22	+13	+60	+64	—14	+26	—21	+62
										65-Pound Book (25 × 38—500)													
1534 1539	0	.16	.86	1500	2.3	19.5	..	0.52	94	69.0	.385	6.73	33	....	....	....	....	....	....	....	....	....	....
1535 1540	410	.15	.83	1600	2.7	22.5	..	0.66	94	69.5	.429	6.05	39	— 6	— 3	+ 7	+17	+15	+27	0	+11	—10	+18
1536 1541	1220	.14	.76	1690	2.7	26.5	..	0.62	84	67.9	.475	5.44	49	—13	—12	+13	+17	+36	+19	—11	+23	—19	+49
1537 1542	2040	.14	.71	1800	2.6	31.5	..	0.80	81	68.4	.507	5.11	57	—13	—17	+20	+13	+61	+54	—14	+32	—24	+73
1538 1543	2860	.13	.69	1860	2.7	36	..	0.93	91	67.2	.531	4.87	65	—19	—20	+24	+17	+85	+79	— 3	+38	—28	+97

TABLE X.—EFFECT OF CALENDERING PRESSURE ON SHEET PROPERTIES OF SULPHITE BOND PAPER

Machine run	Calender pressure, lb./lin. in.	Average: Burst, pts/lb./ream	Tear, gm./lb./ream	Folds, double folds	Tensile, lb./sq. in.	Stretch, %	Gloss, %	Opacity, %	Size number	Ream weight, 25x40—500	Solid fraction	Thickness, mils.	Porosity, sec./100 cc.	Change in sheet properties: Burst, %	Tear, %	Folds, %	Tensile, %	Stretch, %	Gloss, %	Size number, %	Solid fraction, %	Thickness, %	Porosity, %
										16-Pound Bond (17 x 22—500)													
1569	0	.32	0.91	15	3460	4.0	24	..	1.11	40.7	.433	3.43	85	....	....	....	....	....	....	....	....	....	....
1574																							
1570	410	.32	0.88	13	3730	4.1	28	..	1.33	40.3	.484	3.06	91	0	— 3	—13	+ 8	+ 2	+17	+20	+12	—11	+ 7
1575																							
1571	1220	.31	0.84	12	3985	4.2	32	..	1.68	40.1	.534	2.77	105	— 3	— 8	—20	+15	+ 5	+33	+51	+23	—19	+24
1576																							
1572	2040	.30	0.80	10	4270	4.1	37	..	1.79	40.5	.565	2.62	124	— 6	—12	—33	+23	+ 2	+55	+61	+30	—24	+46
1577																							
1573	2860	.29	0.74	8	4165	4.1	41.5	..	1.88	40.1	.589	2.52	141	— 9	—19	—47	+20	+ 2	+73	+69	+36	—27	+66
1578																							
										20-Pound Bond (17 x 22—500)													
1503	0	.45	1.10	69	4300	5.5	18.5	78	1.49	54.2	.48	4.04	122	....	....	....	....	....	....	....	....	....	....
1507																							
1504	410	.44	1.06	75	4720	5.2	21.5	78	1.95	54.2	.53	3.62	136	— 2	— 4	+ 9	+10	— 5	+16	+31	+10	—10	+11
1508																							
1505	1220	.43	1.03	64	5180	5.0	28	78	2.19	54.9	.58	3.32	180	— 4	— 6	— 7	+20	— 9	+57	+42	+21	—18	+47
1509																							
1506	2040	.43	0.99	60	5525	5.0	35	78	2.43	53.9	.62	3.12	236	— 4	—10	—13	+28	— 9	+89	+63	+29	—23	+94
1510																							
										24-Pound Bond (17 x 22—500)													
1511	0	.39	0.98	41	3820	4.7	17.5	84	1.55	69.3	.49	5.30	292	....	....	....	....	....	....	....	....	....	....
1516																							
1512	410	.39	0.95	48	4400	4.7	23	84	2.04	68.9	.56	4.60	388	0	— 3	+17	+16	0	+31	+32	+14	—13	+33
1517																							
1513	1220	.38	0.92	46	4870	4.7	30	84	2.16	68.2	.61	4.22	564	— 3	— 6	+12	+27	0	+71	+39	+25	—20	+93
1518																							
1514	2040	.38	0.89	56	5330	4.5	34.5	84	2.60	68.4	.66	3.90	734	— 3	— 9	+37	+40	— 4	+97	+68	+35	—26	+151
1519																							
1515	2860	.38	0.85	46	5510	4.7	40	84	3.24	68.4	.70	3.74	882	— 3	—13	+12	+44	0	+129	+109	+43	—29	+202
1520																							

definite trends were observed as to the effect of ream weight with respect to pressure.

GLOSS

The kraft wrapper responded to calendering the least as far as gloss was concerned. This fact is probably due to the fiber characteristics which make good formation difficult and thus lower the gloss value. A comparison of the three ream weights of the bond papers shows that as the ream weight is increased, the gloss value increases under the same calendering conditions. The percentage increase shown by the gloss value of the bond was high, the maximum increase being nearly 130% at 2860 pounds per lineal inch calender pressure. Since this furnish contained practically no filler and was made with 15% hardwood fiber, it is further evidence that gloss is considerably affected by the furnish. For book paper that contained about 10% clay filler, the per-

TABLE XI.—EFFECT OF CALENDERING PRESSURE ON SHEET PROPERTIES OF SULPHATE BOND PAPER

Machine run	Calender pressure, lb./lin. in.	Average: Burst, pts./lb./ream	Tear, g./lb./ream	Folds, double folds	Tensile, lb./sq. in.	Stretch, %	Gloss, %	Opacity, %	Size number	Oil number, sec.	Ream weight, 25x40—500	Solid fraction	Thickness, mils.	Porosity, sec./100 cc.	Change in sheet properties: Burst, %	Tear, %	Folds, %	Tensile, %	Stretch, %	Gloss, %	Size number, %	Oil number, %	Solid fraction, %	Thickness, %	Porosity, %
											20-Pound Bond (17 x 22—500)														
1478	0	.42	.97	32	4110	3.7	21	82	1.23	129	52.4	.45	4.29	58	..	..	....	....	..	....	....	....	....	....	....
1477	410	.41	.94	28	4530	3.6	23	82	1.32	106	53.7	.50	3.85	64	—2	—3	—12	+10	..	+10	+ 7	—18	+11	—10	+10
1476	1220	.42	.88	25	5110	3.5	28	82	1.60	133	52.5	.54	3.60	77	0	— 9	—22	+24	..	+33	+30	+ 3	+20	—16	+33
1475	2040	.42	.86	26	5160	3.4	32	81	1.95	135	52.6	.58	3.36	92	0	—11	—19	+26	..	+52	+59	+ 5	+29	—22	+59
1480	2860	.40	.84	26	5310	3.5	38	82	2.24	148	53.0	.60	3.23	119	—5	—13	—19	+29	..	+81	+82	+15	+33	—25	+105

TABLE XII.—EFFECT OF CALENDERING PRESSURE ON SHEET PROPERTIES OF KRAFT WRAPPING PAPER

Machine run	Calender pressure, lb./lin. in.	Average: Burst, pts./lb./ream	Tear, gm./lb./ream	Folds, double folds	Tensile, lb./sq. in.	Stretch, %	Gloss, %	Size number	Ream weight, 25x40—500	Solid fraction	Thickness, mils.	Porosity, sec./100 cc.	Change in sheet properties: Burst, %	Tear, %	Folds, %	Tensile, %	Stretch, %	Gloss, %	Size number, %	Solid fraction, %	Thickness, %	Porosity, %
									40-Pound Kraft Wrapper (24 x 36—500)													
1551	0	.65	1.90	532	5460	6.2	28	1.28	47.9	.429	.434	128	....	....	....	....	....	....	....	....	....	....
1556																						
1552	410	.64	1.86	456	6010	6.2	31	1.53	47.4	.482	.383	150	— 2	— 2	—14	+10	0	+11	+20	+12	—12	+17
1557																						
1553	1220	.63	1.77	406	6410	6.1	34	1.78	47.5	.519	.357	172	— 3	— 7	—24	+17	— 2	+21	+39	+21	—18	+34
1558																						
1554	2040	.62	1.65	387	6560	6.0	38	1.91	47.9	.545	.340	202	— 5	—13	—27	+20	— 3	+36	+49	+29	—22	+58
1559																						
1555	2860	.51	1.51	287	6325	5.7	41	2.10	48.0	.565	.327	222	—21	—20	—46	+16	— 8	+46	+64	+32	—25	+73
1560																						

centage increase in gloss was not so great as in the bond, but the initial gloss value was higher. Although the differences in gloss values were small, the same trend with respect to ream weight was observed in this series as was found in the bond and kraft papers.

Oil Penetration

Since oil penetration is not significant in bond paper, no study was made on this type. While the book paper exhibited somewhat irregular changes, a trend toward a decrease in time of penetration with an increase in calendering pressure was observed.

Porosity

The same trends shown by the gloss curves were indicated by the porosity curves in the calendering tests. As the ream weight increased, the porosity time increased. The bond paper showed a greater increase in porosity time than did the book paper, but the initial porosity value of the book was much lower than that of the bond. The kraft wrapper had the lowest percentage increase in porosity value, and the sulphate bond followed this curve closely. Here again, as in the case of the gloss, the furnish influenced the porosity of the paper when calendered.

Effect on Sizing

Although the precision obtainable by the usual size testing methods is not completely satisfactory, nevertheless a good indication of trends was obtained from the calendering runs. An increase in calendering pressure increased the size number of the paper. From the data obtained it is apparent that ream weight does not significantly affect the change due to calendering, nor does the type of furnish seem to affect this change appreciably.

Folding Endurance

With the exception of the 70-pound bond paper, it was found that an appreciable decrease in folding endurance accompanied an increase in calendering pressure. No definite basis, however, was found for concluding that this held throughout the variations in pressures, since the curve sometimes flattened out toward the high pressure end and sometimes dropped rapidly as the pressure increased. For the 70-pound bond, a considerable increase occurred in folding endurance, but passed through a maximum as the pressure increased. Since this test is at best erratic, an exceptionally large number of tests are necessary to form more definite conclusions. The folding endurance of the book paper was, of course, too low to make any comparison on this grade.

Thickness

The relationship between the pressure applied at the calender stack and the resultant thickness ap-

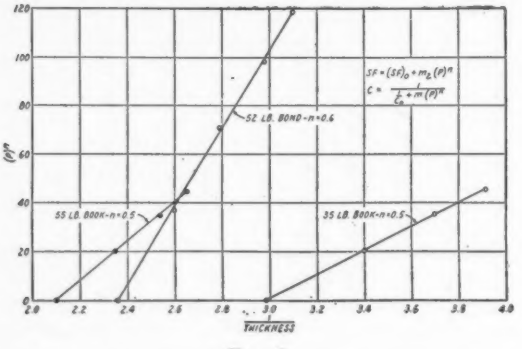

Fig. 6
Relationship of Thickness and Solid Fraction to Calendering Pressure

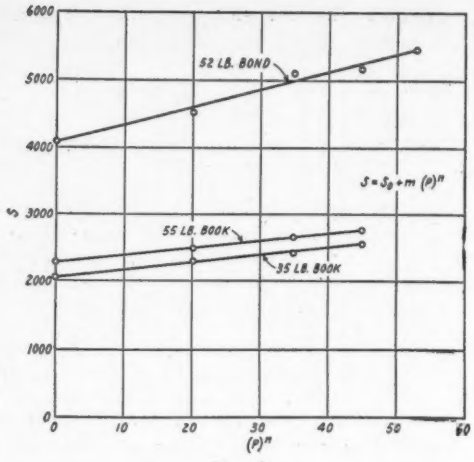

Fig. 7
Relationship of Tensile Strength to Calendering Pressure

pears to be such that an empirical equation can be obtained. Inspection of the curves derived from the data shows how uniformly the percentage decrease in thickness follows a corresponding increase in calender pressure. It was found that in the case of the book and the kraft paper the data obtained was satisfied by the equation

$$C = \frac{1}{\frac{1}{C_o} + m P^{0.8}}$$

where C = thickness, C_o = thickness at 0 pressure, P = pressure and m = a constant. The same relationship in the bond paper was found to be expressed better by the equation

$$C = \frac{1}{\frac{1}{C_o} + m P^{0.6}}$$

Using the reciprocal of the thickness and the values P^n the curves for various ream weights and types were plotted on Cartesian coordinates and are shown in Fig. 6.

Solid Fraction

The solid fraction of the papers tested exhibited the same relationship and the same type of equation held for the change in this property. The equation developed is as follows:

$$SF = SF_o + m_o P^n$$

where SF = solid fraction, SF_o solid fraction at 0 pressure, P = calender pressure, m = a constant, and n = a constant.

Figure 6 shows the solid fraction curves plotted from the data obtained.

Tensile Strength

Throughout all the calendering runs, an increase in calendering pressure resulted in an increase in tensile strength. However, with the kraft wrapper and the bond paper, the curve passed through a maximum as high calender pressure was applied. The equation

$$S = S_o + m P^n$$

expressed the relationship of tensile strength S with respect to calender pressure through the lower pressure range on the bond and kraft paper, and over the entire range of pressures on the book paper (Fig. 7). It may be noted that $n = 0.5$ for the book and kraft paper, while $n = 0.6$ for the bond paper.

The fact that the tensile strength of the bond and kraft paper increases with an increase in calender pressure up to about 1500 pounds per lineal inch, and

then decreases with a further increase of pressure, was observed by earlier investigators. Simmonds and Baird *(7)* showed curves which exhibited this phenomenon, but their data indicated that the maximum tensile strength was passed at a much lower calendering pressure than was found in the experiments here reported. This may be due to the formation of the paper and consequent error introduced in calculating the line pressure. A formation that is somewhat lumpy will produce islands, or high spots, which will in turn receive the greater part of the pressure applied across the sheet. Upon testing such paper, the spots subjected to the high pressures probably would break under less tensile strength than is representative of the true strength of the sheet. This theory is further substantiated in the runs on the book paper of best formation, where the tensile strength did not pass through a maximum. The kraft, which had the poorest formation, showed the greatest drop in tensile strength.

Conclusions

After having determined through preliminary runs that extremely precise control of operating conditions, such as fiber processing, jordaning, forming, drying, and operating speed, was necessary, the desired calendering conditions were selected for this study. From the preliminary runs it was established that: (a) increasing the operating speed decreased the effect of calendering, other things being equal; (b) with the same total pressure the number of nips used in the calender stack appreciably affected the calendering of the paper; (c) the effect of draw between the driers and calender was of little or no significance; (d) apparent roll slippage was due to the extension and stretch of the paper and was, therefore, actually a difference in driven speed.

Using furnishes for wrapping, groundwood, book, and bond papers, processing conditions were selected for each, and in all instances, with the calendering conditions held constant except for variation of pressures, the following conclusions were available:

1. The bursting strength and tearing resistance decreased somewhat irregularly with increasing calender pressure.

2. The gloss value and porosity time increased regularly both with an increase in calender pressure and increase in ream weight.

3. Oil penetration time tended to decrease irregularly in book paper with an increase in calender pressure.

4. Sizing effect increased with an increase in calender pressure.

5. In general, an increase in calender pressure was reflected in a lower folding endurance of paper.

6. The thickness of paper was inversely proportional to the calender pressure, and can be expressed by the equation

$$C = \frac{1}{\frac{1}{C_o} + m\,P^n}$$

7. Solid fraction was proportional to calender pressure and can be expressed by the equation

$$SF = SF_o + m\,P^n$$

8. Tensile strength increased with calender pressure through a maximum in most instances. The increase in tensile strength can be expressed by the equation

$$S = S_o + m\,P^n$$

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(3) Hassehaus, P. *Papier Zeit.* 38, 3320-1, 3364-5 (1914).
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(7) Simmonds, F. A., and Baird, P. K. "Effect of calendering on certain physical properties of paper." (Typewritten report.) Forest Products Laboratory, 1931.
(8) Strachan, J. *Proc. Tech. Sec. Papermakers' Assoc. Great Britain Ireland* 3, Pt. 2, 223-8 (1923).
(9) TAPPI Special Report 297. New York, Technical Association of the Pulp and Paper Industry. p. 7.

TAPPI Notes

Ralph B. Millington, formerly of the Byron Weston Company is now chemical engineer for the Stevens Paper Mills, Manchester, Conn.

C. V. Holmberg, formerly student of the New York State College of Forestry is now with the American Viscose Company, Marcus Hook, Pa.

Charles E. Rogers of the Babcock & Wilcox Company, 85 Liberty street, New York, N. Y. would like to obtain a copy of "The Chemistry of the Sulphite Process" by Miller & Swanson. This book, published by the Technical Association, is now out of print. Anyone having this book who wishes to accommodate Mr. Rogers should write directly to him.

Durward B. Geffken is now with the National Paper Products Company, Carthage, N. Y.

More than two hundred members have already indicated their intention to attend the fall meeting of the Technical Association of the Pulp and Paper Industry at Ann Arbor, Mich. on September 16-19, 1941. Reservations should be made with Dr. Charles A. Fisher, University of Michigan, Ann Arbor, Mich.

Solvay Forms New Section

The Solvay Process Company, manufacturer of alkalies and nitrogen products, has recently established a separate Product Development Section with W. E. Blair, manager and D. H. Ross, assistant manager. Headquarters of the new section will be at 40 Rector street, New York. Messrs. Blair and Ross, formerly associated with the executive office of Solvay Sales Corporation, will apply their broad knowledge of the chemical industry principally to a study of the commercial usefulness of new Solvay products. Their work will involve close cooperation with the research and technical sales groups, with view to broadening the scope of Solvay's service to its customers.

Manchester Mill Sold by Gibbs-Brower

The mill at Manchester, Conn. owned by Raybestos-Manhattan, Inc. of Passaic, N. J., was sold by Gibbs-Brower Company, Inc. of New York, paper and pulp mill brokers, to the Allied Barrel Corporation of Oil City, Pa. The buyers were represented by D. C. Giles. The plant will be known as the Pennaconn Plastic Company and will be put in operation just as soon as repairs are made, about the first of August.

Pulp Purification Meeting at Ann Arbor

The Pulp Purification Committee of the Technical Association of the Pulp and Paper Industry has prepared an unusually good program for its session at the fall meeting of the Association at Ann Arbor, Mich., on September 16, 1941.

This program will consist of a symposium on "The Determination of Oxidizable Materials in Pulps (Bleachability), Liquors and Wash Waters." It has been arranged with the active cooperation of the Subcommittee on Oxidizable Materials, Committee of Standards of the American Chemical Society of which John D. Rue of the Hooker Electrochemical Company is chairman. The chairman of the TAPPI Pulp Purification Committee is D. T. Jackson of the Hammermill Paper Company.

The following papers have been promised and it is planned to have a thorough round table discussion of each:

H. E. Nelson, Nekoosa Edwards Paper Company, will discuss the application of a statistical method to the evaluation of methods of testing for oxidizable materials.

H. Prelinger of Los Angeles, Cal. will discuss the iodate method as a means of controlling wash and residual waters from the sulphite process for the entire cycle of operation from wood to bleached pulp.

Rex Vincent, Bulkley, Dunton Pulp Company will give a paper on "The Use of Bleachability Tests in the Marketing of Pulp."

H. S. Bristol, International Paper Company will give a paper on "An Improved Chlorine Demand Number." This is a quick method of determining the chlorine demand of a sulphite pulp which is recommended as an improvement over the usual permanganate number.

B. L. Browning, Institute of Paper Chemistry, will report on "A Study of Bleachability Methods." This paper indicates the results of a comparative study made under the direction of the TAPPI Chemical Methods Coordinating Committee. The permanganate number, chlorine number and bleach consumption methods were examined and an attempt made to provide a more fundamental basis for correlation of the results obtained by the various bleachability methods.

K. G. Chesley, Crossett Paper Mills, will discuss some experiences in the use of the iodate method.

R. H. Wiles, International Paper Company, will report on the results of a study of the application of the permanganate number to soda kraft pulps.

A summary of the replies to the Technical Association's recent questionnaire on operating control of pulp bleaching will be presented as well as a summary of the method described in Loeschbrandt's "The Bleaching of Sulphate Pulp."

It is also hoped that it will be possible to present a summary of experiences of certain Scandinavian mills with the various bleachability method.

New Literature

The C-E spreader stoker is described in a new catalogue, No. SS-2, issued by the Combustion Engineering Company, 200 Madison avenue, New York. It discusses the latest features in design with many illustrations of assemblies and typical installations. Setting drawings show the application of this method of firing to various types of boilers.

A new turntable conveyor belt in the form ot a catalogue section, has been issued by The B. F. Goodrich Company, Akron, Ohio. It describes functions of the belt and reasons for its patented design, with details of construction and proper method of turning the belt.

Filters for compressed air, gases, etc., are discussed in a new 44-page catalogue issued by the Staynew Filter Corporation. Illustrations, sectional drawings, specification charts and detailed engineering data are given.

Acid proof brick is discussed in a catalogue issued by the General Refractories Company, Philadelphia, Pa. Definite information, based on authoritative tests of the relative value of different types of tower packing is presented in part by charts. The many applications for Acido brick and tile are given, which are furnished in all standard and a wide variety of special shapes and sizes.

Waterproof cements for laying concrete floors, walls, etc., and for patching floors of concrete, are described in a folder issued by the Smooth-On Manufacturing Company, 570 Communipaw avenue, Jersey City, N. J. It described the several cements made by the company for repairing cemented surfaces and stopping seepage in cellars, cisterns; effecting repairs within 12 hours.

The metallizing process is discussed in 53-page booklet issued by the Metallizing Company of America, Inc., 562 West Washington boulevard, Chicago Ill. It discusses the history, purpose and practice of metallizing or metal spraying, for a wide variety of industrial purposes. A list of some of the important applications for the company's "Mogul" metallizing process in truck and bus maintenance work, are included.

Industrial ovens are discussed in Bulletin No. 130, issued by the J. O. Ross Engineering Corporation, 350 Madison avenue, New York. It covers oven construction, method of heating, source of heat and material handling.

Forged steel ball bearings are discussed in detail in the 15th edition of a handbook issued by the New Departure, Division of General Motors Corporation, Bristol, Conn. Principal types and sizes, dimensions, capacities, tolerances and other data on the selection of bearings for various loads and length of service are given. It is of particular interest to designers, draftsmen and others concerned with the selection and application of ball bearings.

A New Plasticizer

Paper, textile and leather coatings made with clay dope dispersions can be rendered more flexible and have greater adhesion by means of a new plasticizer developed by the Glyco Products Company, Inc. This plasticizer, designated as S-376, can be stirred directly into the converters clay coating dope.

The procedure is to add the clay, carnauba wax emulsion, etc. to the pre-cut casein solution, stirring until completely dispersed. Then add, with high speed agitation, the S-376 in amounts of approximately 10%, based on the total solids of the clay dope.

The final dispersion which remains stable, improves the calendering operation and produces coated sheets with greater water resistance. Further details, samples and prices can be obtained from the Glyco Products Co., Inc., 230 King street, Brooklyn, N. Y.

Imports of Paper and Paper Making Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard; Bleached Sulphite More Acute—Some Grades of Old Waste Lower.

Effective September 30, 1939, under Treasury Decision 49,970, all publications, exchanges and trade associations, were denied access to import manifests at the New York Customs House. The Paper Trade Journal and other interested parties have vigorously protested this ruling, and as soon as the order of the Treasury Department is modified or rescinded, full publication of all manifests will be resumed in these columns. In the interim, the Paper Trade Journal is making every possible effort to gather all available information from manifests, at various outside sources.

NEW YORK IMPORTS

WEEK ENDING JULY 31, 1941

SUMMARY

Cigarette paper ..... 20 cs.
Newsprint ..... 11,696 rolls.

CIGARETTE PAPER

Quality Supplies, Ltd., ——, Lisbon, 20 cs.

NEWSPRINT

H. G. Craig Co., Inc., ——, Donnacona, 377 rolls.
——, ——, Cornerbrook, 1,506 rolls.
International Paper Co., ——, Gatineau, 288 rolls.
H. G. Craig Co., Inc., ——, Donnacona, 362 rolls.
——, ——, Comeau Bay, 7,715 rolls.
H. G. Craig Co., Inc., ——, Donnacona, 330 rolls.
International Paper Co., ——, Gatineau, 330 rolls.
H. G. Craig Co., Inc., ——, Donnacona, 387 rolls.
H. G. Craig Co., Inc., ——, Donnacona, 401 rolls.

RAGS, BAGGINGS, ETC.

West Texas Cottonoil Co., ——, Buenos Aires, 395 bls. cotton linters.
National City Bank, ——, Santos, 149 bls. cotton waste.
——, ——, Santos, 12 bls. cotton waste, 23 bls. scrap press cloth.
New England Waste Co., ——, Buenos Aires, 213 bls. cotton linters, 62 bls. cotton picker waste.
Tradesmens Natl. Bank Trust Co., ——, Buenos Aires, 360 bls. cotton linters.
Kauders Steuber Co., ——, Buenos Aires, 585 bls. cotton linters.
W. Intner & Co., ——, Bombay, 100 bls. cotton waste.
O'Brien Products, Inc., ——, Bombay, 100 bls. cotton waste.
New England Waste Co., ——, Bombay, 200 bls. cotton waste.
Hercules Powder Co., ——, Santos, 1,857 bls. cotton linters, 553 bls. cotton residue.
West Texas Cottonoil Co., ——, Santos, 4,203 bls. cotton linters.
Atlas Waste Manfg. Co., ——, Havana, 30 bls. cotton sweepings.
Philadelphia Natl. Bank, ——, Callao, 70 bls. cotton waste.

GLUESTOCK, ETC.

——, ——, Vera Cruz, 180 bags gluestock.
Chase National Bank, ——, Buenos Aires, 21 bls. dry gluestock.
——, ——, Santos, 3,048 bags glue bones, 152,400 kilos.
National City Bank, ——, Santos, 300 bags glue bones, 15,240 kilos.
Irving Trust Co., ——, Santos, 400 bags glue bones, 20,320 kilos.
H. Remis & Co., ——, Rio de Janeiro, 295 bls. leather waste.
Balfiur Guthrie & Co., ——, Havana, 15 pkgs. fleshings.

CASEIN

Natl. Dairy Products Corp., ——, Buenos Aires, 1,168 bags, 70,080 kilos.
Packing Products Co., ——, Buenos Aires, 510 bags, 30,600 kilos.
T. M. Duche & Sons, ——, Buenos Aires, 417 bags, 25,020 kilos.
Trans Atlantic Animal By-Products Corp., ——, Buenos Aires, 834 bags, 50,040 kilos.
Fleischmann Burd & Co., ——, Buenos Aires, 417 bags, 25,020 kilos.

Discontinue Iron Tag for Defense

[FROM OUR REGULAR CORRESPONDENT]

EAST WALPOLE, Mass., July 28, 1941.—Hollingsworth & Vose Company, manufacturers of rope and jute manila papers, have been obliged to discontinue temporarily the manufacture of Iron Tag, due to difficulties in obtaining raw material.

They have sent the following circular letter to their customers, under date of July 24:

"For more than 30 years this company has manufactured Iron Tag. It has been nationally advertised and is universally known for its high quality. The name Iron Tag has been almost synonymous with Hollingsworth & Vose Company.

"We are now presented with a situation which we never thought would exist. Diminishing supplies of raw material make it essential that such stocks as are available be conserved for use for defense purposes. We feel this obligation deeply, and intend to do our part to the best of our ability.

"For this reason we, therefore, notify you that with the completion of making orders now in our hands we will temporarily discontinue manufacturing this grade. Stocks on hand will be sold as long as they last.

"We assure you that this action is not taken through choice but is entirely brought about by conditions over which we have no control. We do not intend that it shall be permanent. As soon as conditions improve we fully intend to resume the manufacturing of this grade with all its quality features. Meanwhile, we must accept conditions as they exist anticipating the return of more normal times when Iron Tag can again take its place as a leader in the No. 1 Jute Tag field."

Cut in Chlorine Use Impends

With the placement of chlorine on the mandatory priority list this week, a drastic curtailment is due shortly. This means that industry will be allowed chlorine on any basis considered advisable.

The Office of Production Management, OPM, has requested the American Paper and Pulp Association to submit a report covering the importance of chlorine in the manufacture of different grades of paper. The various divisions of the OPM are meeting throughout this week and their reports will be co-related with the Technical Committee of the American Paper and Pulp Association, which meets in New York on August 1. The co-related report will be given to the OPM at its request.

New York Paper and Pulp Market Review

Demand For Paper Continues To Mount With Production For Year Expected In Some Quarters To At Least Equal Estimated Mill Capacity—Waste Paper Strong With Some Price Advances.

Office of the PAPER TRADE JOURNAL,
Wednesday, July 30, 1941.

New orders are receding from the all-time record peak of a few weeks ago because of the inability of paper mills to fill the seemingly insatiable demand for many grades of paper and paper products. Reports from many manufacturers' representatives, jobbers, and general paper merchants during the current week reflect the unprecedented demand can only be partially filled.

At the current price level, the varied uses of paper and the rapidly increasing utilization of various forms of paper as substitutes for more expensive and essential defense materials, continues to greatly stimulate its use. Defense requirements for paper are very heavy but the general demand continues to mount, which augurs well for the future when drastic economic readjustments seem inevitable.

The very high level of business is indicated in the index of general business activity for the week ended July 19 which advanced to 131.5%, from 128.6% for the preceding week, compared with 107.3% for the corresponding week last year. Paper board production was up 11.9%.

Paper production for the week ended July19 was estimated at 100.4%, compared with 91.3% for 1940, with 80.5% for 1939, with 76.3% for 1938, and with 85.9% for the corresponding week of 1937.

Paper board production for the week ended July 19 was 92.0%, compared with 77.0% for 1940, with 70.0% for 1939, with 65.0% for 1938, and with 74.0% for the corresponding week for 1937.

Backlog orders are mounting and many manufacturers and distributors are forced to limit shipments in the endeavor to meet all demands for paper as equitably as possible. The output of many mills is sold out for the year and, in many instances, no new orders are being accepted.

The price situation is very favorable for the consumer. No important changes from prevailing quotations, announced prior to July for the third quarter of this year, have been reported to date.

Chemical Pulp

The trend of production and consumption of pulp is upward. The chlorine situation is becoming more critical. Chlorine is now on the mandatory priority list. The supply is reported adequate for the current week but defense needs for next month are expected to be very heavy and the tonnage available for the pulp industry is expected to be drastically curtailed. A special meeting of the Technical Committee of the American Paper and Pulp Association has been called for August 1 to report on the requirements for various grades to the Office of Production Management. Contract pulp prices will remain unchanged during the third quarter.

Rags

No important change in the rag market has been reported this week. Prices are firm in all grades. Demand is active for roofing rags and prices are firmly maintained.

Old Rope and Bagging

Demand for old No. 2 Manila rope continues active. This market is very firm under limited supplies. Prices are unchanged.

Scrap bagging continues in strong demand, with quotations more or less nominal, under limited supplies.

Old Waste Paper

The paper stock market continues in a strong position, with old corrugated in active demand and higher this week, being currently quoted at .87½. Advances have also occurred in old kraft, compressed bales, currently quoted at from 1.65 to 1.75; and in white envelope cuttings, currently quoted at from 3.25 to 3.50.

Twine

Demand for twin continues active, with scarcity reported in imported fibers. Some manufacturers have announced the withdrawal of prices. In some grades, current quotations are of a nominal character.

Asks Chicago Mayor To Aid

[FROM OUR REGULAR CORRESPONDENT]

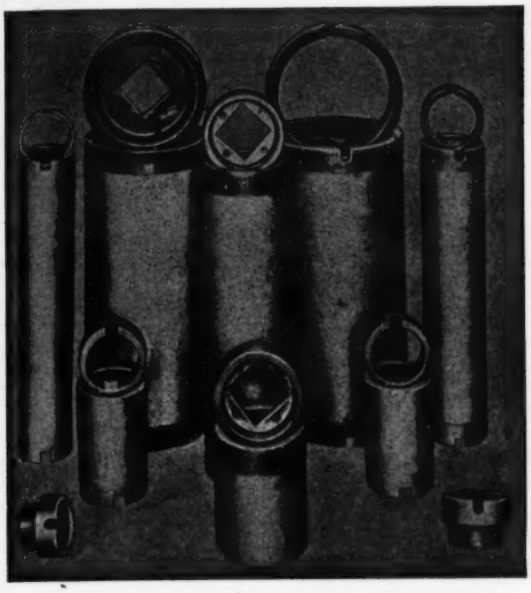
WASHINGTON, D. C., July 28, 1941—Mayor Edward J. Kelly of Chicago was asked to day "to do everything possible" to permit waste paper collectors to work in areas of that city from which they are now barred, in a letter sent by Leon Henderson, Administrator, Office of Price Administration and Civilian Supply.

Pointing out that supplies of waste paper are today inadequate to permit paperboard mills to meet expanding civilian and defense needs, the letter states that entry of waste paper collectors into restricted residential areas in Chicago would permit collection of an additional 4,000 or 5,000 tons of waste paper each month.

To Stabilize Waste Material Prices

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., July 28, 1941—At a meeting held in Washington on Friday last, it was agreed by the representatives of the waste paper industry to continue with the stabilization program of prices on lower grades which go into the manufacture of box boards, such as No. 1 mixed paper, straw board chip, binders board chip, corrugated board and old newspapers, until September 1.



ELIXMAN

CAPS

Straight wound paper cores made in sizes from 2" to 10" inside diameter with any thickness wall required.

Long draw protected slot caps of heavy gauge steel in all standard sizes.

Heavy duty caps with reenforced square hole. This patented feature of reenforcement gives added strength and durability.

CORES

Samples of caps or cores will be gladly submitted

ELIXMAN PAPER CORE COMPANY, INC.

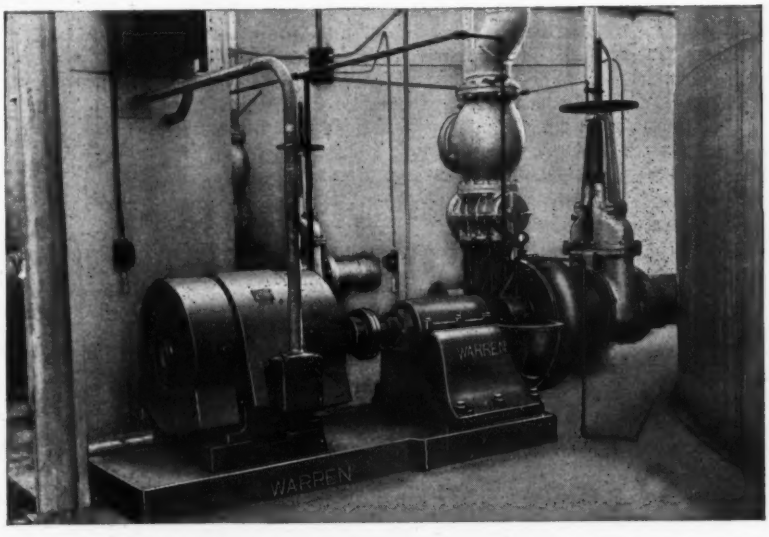
CORINTH, N. Y.

19 WARREN LIQUOR PUMPS

TOGETHER WITH 33 OTHER WARREN PUMPS PROVE THEIR DEPENDABILITY AND EFFICIENCY OVER PERIOD OF YEARS IN SOUTHERN MILL

This is only one of many "case histories" on file with Warren and if you want a liquor pump that keeps cool and on the job in hot, steady work, please note these Warren features: Easily replaceable case liner takes up wear in handling thick and corrosive liquors . . . Large stuffing box with large water chamber for effective cooling . . . Impeller keeps pressure on the box practically the same as at suction inlet . . . Coupling is all metal, having no rubber bushing to deteriorate. And most important, you can remove the rotating member without moving the motor or disconnecting either the suction or discharge line.

For the complete facts, write for bulletin. And on your next installation or replacement, check with Warren on a pump built to fit the job.



Typical Warren Type "L" Liquor Pump at a prominent Southern Paper Mill.

WARREN PUMPS

Warren Steam Pump Co., Inc., Warren, Massachusetts

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, July 30, 1941.

BLANC FIXE—Prices on blanc fixe are firm and unchanged and conform to prevailing market levels. The pulp is currently quoted at $35 per ton, in barrels, at works; the powder is currently quoted at $50 per ton, f.o.b., works. Demand reported moderate for the week.

BLEACHING POWDER—Quotations on bleaching powder are firm. Demand reported active for the week. Bleaching powder is currently quoted at $2 per 100 pounds, in drums, at works.

CASEIN—Prices on casein are firm, with prices a little higher for the current week. Standard domestic casein, 20-30 mesh, is currently quoted at 22½ cents per pound; 80-100 mesh, at 23 cents per pound. All prices in bags, car lots. Argentina casein, 20-30 mesh, is currently offered at 21 cents per pound. No quotations on French casein.

CAUSTIC SODA—Quotations on caustic soda are firm and continue unchanged at prevailing market prices. Demand reported heavy. Solid caustic soda is currently quoted at $2.30 per 100 pounds; flake and ground at $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Prices on china clay are firm and conform to prevailing market levels. Demand reported moderate at this date. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay at from $12 to $22 per ton, at mines. Imported clay is currently offered at from $13 to $25 per long ton, ship side.

CHLORINE—Quotations on chlorine are firm and unchanged. Market strong. Demand heavy. Shipments on allocation basis. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The rosin market is reported firm for the week with prices higher on some grades. "G" gum rosin is currently quoted at $2.25 per 100 pounds, in barrels. Savannah "FF" wood rosin is currently quoted at $2.25 per 100 pounds, in barrels, New York. Seventy per cent gum rosin size is quoted at $2.82 per 100 pounds, f.o.b., works.

SALT CAKE—Prices on salt cake are firm and nominal. Demand good. Domestic salt cake is currently quoted at $15.50 per ton, in bulk; chrome cake at $16 per ton. All prices in car lots, f.o.b., shipping point. The quotation of $16 per ton imported salt cake is nominal.

SODA ASH—Quotations on soda ash are firm and continue to conform to prevailing market levels. Demand reported good for the week. Prices on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Prices on corn starch are firm and are reported unchanged for the current week. Pearl is currently quoted at $3.10 per 100 pounds; powdered starch at $3.20 per 100 pounds. All prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are firm. Demand reported good for the current week. The commercial grades are currently quoted at $1.15; iron free at $1.60 per 100 pounds. All prices in bags, car lots, f.o.b., works.

SULPHUR—Prices on sulphur are firm and conform to prevailing market levels. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are quoted at $19 per ton.

TALC—Quotations on talc are firm and continue unchanged at prevailing market prices. Domestic talc is currently quoted at from $15 to $21 per ton, at mines. No quotations on imported talc.

MARKET QUOTATIONS

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	"	—
Kraft—per cwt.—Delivered Zone A			
Northern, Extra Quality	$5.25	@$6.00	
Superstandard	4.87½	" 5.25	
Northern Standard Wrapping	4.50	" 5.00	
Standard Wrapping	4.50	" —	
Tissues—Per Ream—Carlots			
White No. 1	.97½	" —	
White No. 1 M. G.	.95	" —	
White No. 1½	.80	" —	
White No. 2	.75	" —	
Anti-Tarnish M. G.	.80	" —	
Colored	.85	" —	
Kraft	.87½	" —	
Manila	.77½	" —	
Unbl. Toilet, 1 M.	3.75	" —	
Bleached Toilet	5.26	" —	
Paper Towels, Per Case—			
Unbleached, Jr.	2.10	" —	
Bleached, Jr.	3.60	" —	
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	8.75	@10.75	
No. 1 Manila Wrapping, 35 lb.	5.50	" 5.75	
No. 2 Manila Wrapping, 35 lb.	5.25	" 5.50	
Boards, per ton—			
News	42.50	@ —	
Chip	42.50	" —	
Sgl. Mla. Ll. Chip	57.50	" —	
White Pat. Coated	72.50	" —	
Kraft Liners	60.00	" —	
Binders Boards	80.00	" —	

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$39.10@$46.00	$40.25@$47.25
100% Rag	31.05 " 36.50	32.20 " 37.75
85% Rag	.... "	29.90 " 35.00
75% Rag	23.60 " 27.75	24.75 " 29.00
65% Rag	.... "	21.65 " 26.25
50% Rag	17.55 " 21.50	18.70 " 22.75
25% Rag	14.65 " 17.75	15.80 " 19.25

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$9.35@$11.50	$11.55@$12.75
No. 2	8.50 " 10.25	9.65 " 11.75
No. 3	8.05 " 9.25	9.20 " 11.25
No. 4	7.70 " 9.50	8.90 " 10.75

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper.

Delivered in Zone 1:

No. 1 Glossy Coated	$11.90	@$13.50
No. 2 Glossy Coated	10.35	" 11.75
No. 3 Glossy Coated	9.55	" 11.00
No. 4 Glossy Coated	9.15	" 10.50
No. 1 Antique (watermarked)	9.05	" 10.50
No. 2 Offset	8.40	" 9.75
A Grade E. F.	8.20	" 9.50
A Grade S. & S. C.	8.45	" 9.75
B Grade E. F.	7.65	" 8.75
B Grade S. & S. C.	7.90	" 9.00
C Grade E. F.	7.35	" 8.50
C Grade S. & S. C.	7.60	" 8.75
D Grade E. F.	7.10	" 8.25
D Grade S. & S. C.	7.35	" 8.50

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—		
Moist	No prices	
Dry	No prices	

(Delivered)

No. 1 Domestic and Canadian	40.00	@42.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—		
Prime Bleached Sulphite	3.72½	@ 3.87½
Prime Qualities—		
Easy-Bleaching Sulphite	3.17½	" 3.73
Strong Unbleached Sulphite	3.17½	" 3.73
News Grade, delivered Unbleached Sulphite	61.00	" 64.25

(On Dock, Atlantic Ports)

Kraft Bleached	4.12½	" —
Kraft Light & Strong	3.75	" 4.15
Kraft No. 1	3.60	" 4.00

(F. o. b. Pulp Mill)

Kraft Domestic and Canadian	2.75	" 3.37½

(Delivered)

Soda Bleached	3.30	" —

Add 60 cents per short ton, dock charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—		
New White, No. 1.	6.00	@ 6.25
Silesias No. 1	4.25	" 4.50
New Unbleached	6.00	" 6.25
Blue Overall	4.75	" 5.00
Fancy	2.25	" 2.50
Washables	2.00	" 2.15
Mixed Khaki Cuttings	2.50	" 2.75
O. D. Khaki Cuttings	3.00	" 3.15

Old Rags

White, No. 1—		
Repacked	3.10	" 3.35
Miscellaneous	2.35	" 2.65
White, No. 2—		
Repacked	2.50	" 2.75
Miscellaneous	2.00	" 2.25
Thirds and Blues—		
Repacked	1.25	" 1.35
Miscellaneous	1.10	" 1.25
Roofing Rags—		
No. 1	1.30	" 1.35
No. 2	1.20	" 1.25
No. 3 (bagging)	.95	" 1.00
No. 4	.90	" .95
No. 5A	.90	" .95

Foreign Rags

All prices nominal.

New Rags

New Dark Cuttings	2.25	@ 2.40
New Mixed Cuttings	2.00	" 2.20
New Light Silesias	5.50	" 5.75
Light Flannelettes	5.50	" 5.75
New White Cuttings	7.00	" 7.50
New Light Oxfords	4.00	" 4.50
New Light Prints	3.00	" 3.25

Old Rags

No. 1 White Linens	7.50	" 8.50
No. 2 White Linens	6.50	" 7.50
No. 3 White Linens	4.50	" —

West Virginia Pulp and Paper Company

230 Park Ave.
New York

35 East Wacker Drive
Chicago

Public Ledger Building
Philadelphia, Pa.

503 Market St.
San Francisco, Cal.

Manufacturers of

ENGLISH FINISH SUPERCALENDERED
MACHINE FINISHED BOOK
and LITHOGRAPHIC PAPERS

Offset, Envelope, Bond, Writing, Mimeograph, Ledger, Eggshell, Cover and Music Papers, Index Bristol, Post Card and Label Papers

HIGH GRADE COATED BOOK

• • • •

KRAFT WRAPPING AND KRAFT ENVELOPE
KRAFT LINER BOARD
BLEACHED SULPHITE AND SODA PULP
BLEACHED AND UNBLEACHED KRAFT PULP

MILLS:

Mechanicville, New York
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Cass, West Virginia
Charleston, South Carolina

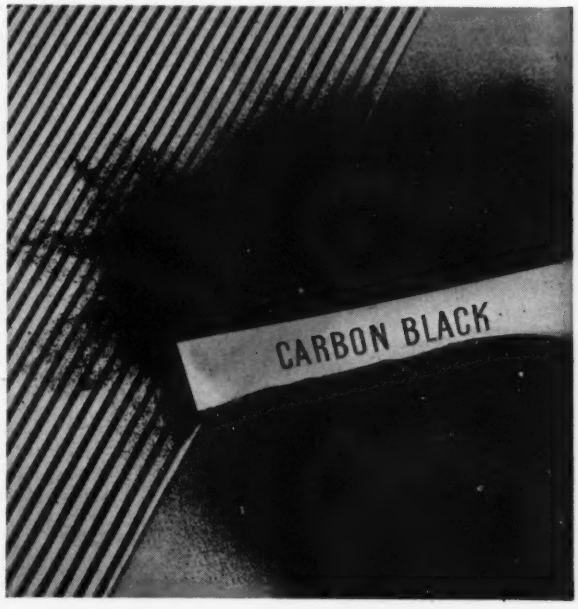
More than just a TRADE MARK

EXCELSIOR Woolen Co. KNOX Camden, Me. FELTS & JACKETS

BUT also a guarantee by men who for 75 years have prided themselves in making finer felts. TO YOU —this is the mark of dependability, longer felt life and greater saving.

KNOX WOOLEN CO.
CAMDEN, MAINE.

CARE in the selection of carbon black will help you obtain finer, more uniform results in the production of your black papers. Witco Carbon Blacks are in increasing demand by paper manufacturers because of the excellent results they give. They are available in a variety of



types to meet a wide range of customers' requirements. Wishnick-Tumpeer service is backed by the resources of a modern research and testing laboratory where work is constantly being done to improve carbon black and facilitate its use for various purposes. Ask for further information; your inquiries will be given prompt attention.

WISHNICK-TUMPEER, INC.

Manufacturers WITCO *and Exporters*

New York, 295 Madison Avenue • Boston, 141 Milk Street • Chicago, Tribune Tower • Cleveland, 616 St. Clair Avenue, N. E. • Witco Affiliates: Witco Oil & Gas Company • The Pioneer Asphalt Company • Panhandle Carbon Company • Foreign Office, London, England.

No. 4 White Linens.	2.25	@	3.25
No. 1 White Cotton.	4.25	"	4.75
No. 2 White Cotton.	3.25	"	3.75
No. 3 White Cotton.	2.50	"	3.00
No. 4 White Cotton.	1.90	"	2.20
Extra Light Prints..	2.00	"	2.40
Ord. Light Prints...	1.75	"	2.15
Med. Light Prints...	1.55	"	1.95
Dutch Blue Cottons.	2.25	"	2.50
French Blue Linens.	3.00	"	—
Checks and Blues...	2.00	"	—
Linsey Garments....	1.90	"	2.00
Dark Cottons.....	1.50	"	1.60
Old Shopperies.....	1.30	"	1.45
New Shopperies.....	1.45	"	1.50
French Blues.....	2.25	"	2.50

Old Rope and Bagging

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.15	@	4.25
Wool Tares, light....	2.50	"	2.75
Wool Tares, heavy..	2.50	"	2.75
Bright Bagging.....	3.15	"	3.30
Manila Rope—			
Foreign	5.75	"	6.00
Domestic	5.75	"	6.00
Jute Threads.....	2.75	"	3.00
Sisal Strings	2.10	"	2.35
Mixed Strings.....	1.10	"	1.20

Old Waste Papers

(F. o. b. New York)

Shavings—			
Cuttings	3.25	@	3.50
Cuttings	3.10	@	3.25
Ordinary Hard			
White No. 1....	2.75	"	3.00
Soft White No. 1..	2.35	"	2.50
Soft White Extra..	2.70	"	2.85
Flat Stock—			
Stitchless	1.10	"	1.25
Overissue Mag.....	.90	"	1.00
Solid Flat Book...	.90	"	.95
Crumbled No. 1...	.70	"	.75
Ledger White Stock.	1.85	"	1.90
Ledger Stock Colored	1.20	"	1.30
Manila—			
New Env. Cut....	3.25	"	3.50
New Cuttings.....	3.00	"	3.25
Old Kraft Machine			
Compressed bales..	1.65	"	1.75
News—			
No. 1 White News	1.50	"	1.60
Strictly Overissue.	.75	"	.80
Strictly Folded....	.65	"	—
Corrugated	.87½	"	—
No. 1 Mixed Paper..	.57½	"	—

Twines

(F. o. b. Mill)

(Soft Fiber)			
Coarse Polished—			
India	.20	@	—
White Hemp.....	.20	"	—
Fine Polished—			
Fine India.....	.24	"	—
Unpolished—			
Box	.16¾	"	—
Paper Makers.....	.16	"	—
Tube Rope.....	.17½	"	—
Wall Paper.....	.19½	"	—
Wrapping	.21	"	—
Soft Fiber Rope...	.18	"	—
Cotton	.24	"	—
(Hard Fiber)			
Medium Java.....	.15	"	—
Mex. Sisal.....	.14	"	—
Manila	.26	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White No. 1.	.06½	@	.06¾
New White No. 2.	.03½	"	.04
Light Silesias.....	—	"	.04½
Silesias, No. 1....	—	"	.04
Black Silesias, soft	—	"	.03
New Unbleached..	.06¼	"	.06½
Washable Prints..	.02½	"	.03
Washable No. 1..	—	"	.01½
Blue Overall.....	.04	"	.04½
Cottons—According to grades—			
Washable shredding	—	"	.01½
Fancy Percales....	.03	"	.03¼
New Black Soft...	.02½	"	.02¾
New Light Seconds	—	"	.04
New Dark Seconds	—	"	1.50
Khaki Cuttings—			
No. 1 O. D.....	.03	"	.03¼
No. 2 Mixed.....	.02	"	.02¼
Corduroy	.01¼	"	.01½
New Canvas.....	.04½	"	.05
New Black Mixed.	—	"	.02¾

Domestic Rags (Old)

White No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.75	"	3.00
Thirds and Blues—			
Miscellaneous	1.35	"	1.50
Repacked	1.55	"	1.55
Black Stockings (Export)	Nominal		
Roofing Stock—			
Foreign No. 1....	Nominal		
Domestic No. 1...	1.30	"	1.35
Domestic No. 2...	1.10	"	1.15
Roofing Bagging..	1.00	"	1.05

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	3.25	@	3.75
Domestic	3.50	"	3.75
Manila Rope.....	—	"	5.50
Sisal Rope.....	2.00	"	2.25
Mixed Rope.....	.75	"	1.00
Scrap—			
No. 1.....	3.25	"	3.50
No. 2.....	—	"	1.50
Wool Tares, heavy...	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.25	"	3.50

Old Papers

(F. o. b. Phila.)

Shavings—			
Hard White Special	3.15	@	3.20
Hard White.....	2.85	"	2.90
No. 1 Soft White..	2.25	"	2.30
No. 2 White.....	1.85	"	1.90
No. 1 Mixed.....	1.20	"	1.25
Solid Ledger Stock..	1.90	"	2.00
Ledger Stock, white.	1.75	"	1.80
Ledger Stock, colored	1.30	"	1.40
No. 1 Books, heavy..	1.15	"	1.20
Manila Cuttings.....	2.00	"	2.25
Print Manila	.65	"	.70
Container Manila....	.60	"	.65
Kraft Paper.....	1.45	"	1.50
No. 1 Mixed Paper..	.57½	"	—
Straw Board Chip...	.50	"	—
Binders Board Chip..	.50	"	—
Corrugated Board....	.80	"	—
Overissue News.....	.85	"	.90
Old Newspapers.....	.65	"	—

BOSTON

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	3.15	@	3.25
No. 1 Soft White	2.50	"	2.75
No. 2 Mixed.....	.90	"	1.00
Solid Ledger Books..	2.00	"	2.10
Overissue Ledger Stock	1.75	"	2.00
White Ledger Stocks	1.50	"	1.65
Mixed Ledgers	1.25	"	—
No. 1 Heavy Books	1.10	"	1.20
No. 1 Books, Light..	.75	"	.85
Crumpled Stitchless Book Stock.....	1.15	"	1.20
Manila Env. Cuttings	3.00	"	3.25
Manila Envelope Cuttings, extra quality	2.75	"	3.00
White Blank News..	1.70	"	1.80
No. 1 Kraft.....	1.35	"	1.45
Extra No. 1 Kraft..	1.75	"	—
Mixed Papers.....	.57½	"	—
Print Manila.....	.70	"	—
Container Manila....	.65	"	.75
Old Newspapers.....	.65	"	—
Paper Wool Strings.	1.30	"	1.35
Overissue News.....	.65	"	.70
Box Board Chips.....	.35	"	—
Corrugated boxes....	.80	"	.85
Kraft corrugated boxes	1.25	"	1.35
New Kraft Corrugated Cuttings	1.90	"	2.00
Screening Wrappers.	.85	"	.90

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	4.25	@	4.75
Sisal Rope.....	3.00	"	3.25
Mixed Rope.....	1.00	"	1.25
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Soft Jute Rope.....	4.75	"	5.00
Manila Rope—			
Foreign	(nominal)		
Domestic	6.00	"	6.25
Jute Carpet Threads.	3.00	"	3.25
Bleachery Burlap....	6.00	"	6.25
Scrap Burlap—			
Foreign	(nominal)		
Domestic	3.25	"	3.75
Scrap Sisal.....	3.00	"	3.25
Scrap Sisal for Shredding	3.25	"	3.50
Wool Tares—			
Foreign	(nominal)		
Domestic	4.00	"	4.25
Aust. Wool Pouches.	4.25	"	4.60
New Burlap Cuttings	4.50	"	5.00
Heavy baling bagging	3.50	"	4.00
Paper Mill Bagging..	3.50	"	3.75
No. 2 Bagging.....	.60	"	.75

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints.	—	@	.03
Fancy Percales....	.03¾	"	4.00
New White No. 1.	.06¼	"	.06½
New Light Flannelettes	.04¼	"	.04½
Canton Flannel, Bleached	.06½	"	.06¾
Underwear Cutters, Bleached	.06¼	"	.06¾
Silesias No. 1.....	.04¼	"	.04½
New Black Silesias..	4.00	"	—
Red Cotton Cuttings	.04	"	.05
Soft Unbleached....	.06½	"	.06¾
Blue Cheviots.....	.04½	"	.04¾
Fancy	.01¾	"	.02
Washable	.01¾	"	—
Cottons—According to Grades—			
Blue Overalls.....	.04¼	"	.04½
New Black, Soft..	.03	"	.03¼
Khaki Cuttings.....	.02¼	"	.02½
O. D. Khaki.....	.02½	"	.03¼
Corduroy	.02	"	.02¼
New Canvas.....	.05½	"	—
B. V. D. Cuttings...	.06¼	"	.07

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	2.75	@	3.00
Miscellaneous	2.00	"	2.25
White No. 2—			
Repacked	1.90	"	2.00
Miscellaneous	2.00	"	2.25
Twos and Blues.....	1.75	"	2.00
Old Blue Overalls...	1.60	"	2.00
Thirds and Blues....	1.50	"	—
Miscellaneous	1.25	"	1.35
Black Stockings.....	3.50	"	4.00
Roofing Stock—			
No. 1.....	1.20	"	1.25
No. 2.....	.95	"	1.00
No. 3.....	.85	"	.95

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons.....	(nominal)
Dutch Blues.....	(nominal)
New Checks and Blues	(nominal)
Old Fustians.....	(nominal)
Old Linsey Garments.	(nominal)
New Silesias.....	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings....	3.00	@	—
No. 1 Hard White	2.50	"	2.65
No. 1 Soft White.	2.00	"	2.20
Ledger and Writings	1.30	"	1.45
Solid Books	1.10	"	1.15
Blanks	1.50	"	1.55
Krafts	2.20	@	2.30
New Kraft Cuts....	2.40	"	2.50
Overissue News.....	.75	"	.85
Old Newspapers—			
No. 1 Folded News	.70	"	.75
No. 1 Mixed Paper	.60	"	.65
Roofing Stocks—			
No. 1.....	.95	"	1.00
No. 2.....	.85	"	.90

Cromwell Paper Co. To Make Pliofilm

The conversion of Pliofilm into specially designed packages, bags and merchandise display covers is being introduced by the Cromwell Paper Company, Chicago, according to Joseph Weil, president of the firm.

Most Pliofilm items produced by Cromwell will be "custom built" to solve a difficult packaging problem or meet the individual need of a manufacturer of consumer merchandise.

A large section of the new addition to their Chicago plant at 4801-39 South Whipple Street, will be given over to the Pliofilm division.

The Cromwell Paper Company also manufactures Cromwell and Ironsides Tympan for high speed presses, Crom-Tex laminated cellulose acetate specialties, Crom-Pax mothproof bags, Pak-Pruf shipping papers and shipping bags.

Dryden To Have Good Year

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., July 28, 1941—While the fiscal year of Dryden Paper Company ended September 30, 1940, was the best since 1929, the current year should set a mark well ahead of last year. With a quite adequate supply of power as against a marked scarcity this time last year, the plant at Dryden is operating at 100 per cent capacity in its kraft, or sulphate, pulp division, and practically so in kraft paper.

The greater demand for kraft paper, in its market in Western Canada, is the natural result of paper for cement bags. Most of the surplus kraft pulp finds an even readier market than last year in the United States.